

Indoor airPLUS

Better Environments Inside and Out



AGENDA

- Special Demonstration
- Introduction of Panelists
- Brief Intro to IAQ & Indoor airPLUS
- How to Rate Indoor airPLUS homes
- Questions

EXPERT PANEL

Justin Erickson - E3 Energy, LLC



Indoor airPLUS Leadership Award Winner, 2010

Asa Foss - U.S. Green Building Council



LEED for Homes, Manager for Technical Development

Kevin Gobble - Habitat for Humanity Int'l



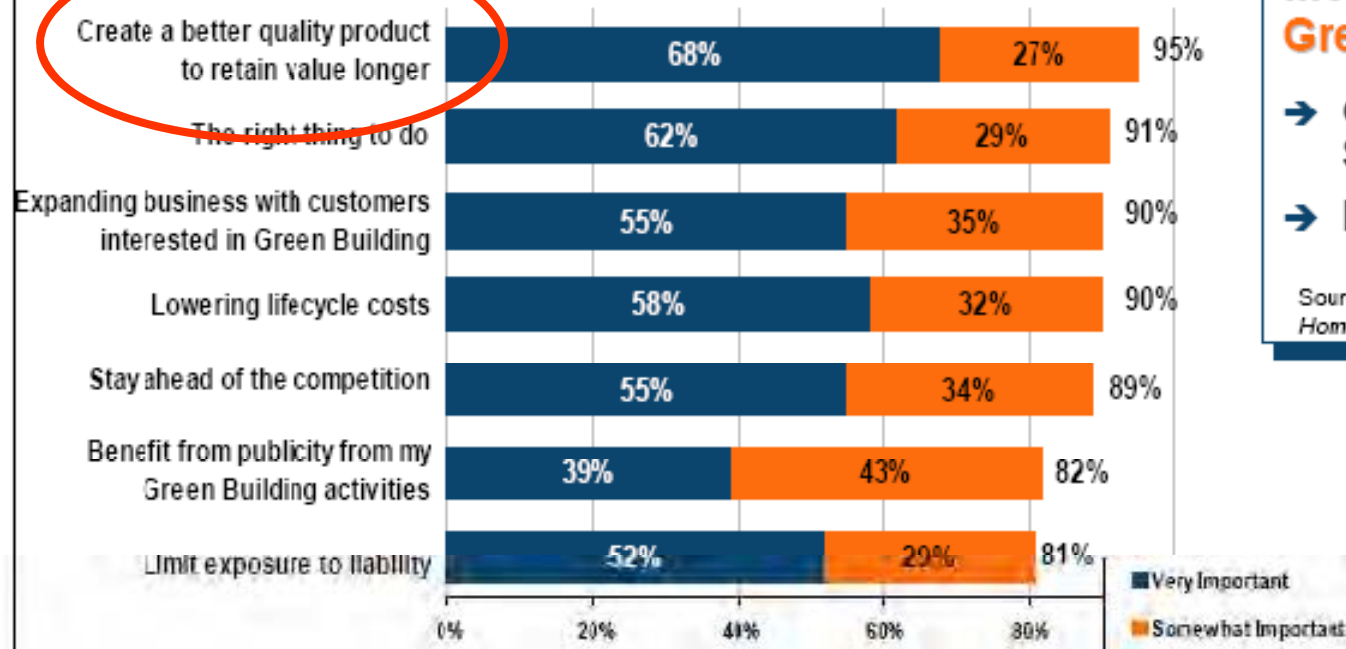
Sustainable Building and Design Specialist

What is a **Green** Home?

Quality Becomes Most Important Motivation for 2008 Builders to Build Green

→ Top Motivator in 2006: “Right thing to do”

Important Motivations Behind Building Green according to 2008 builders



Green Home Buyers: Motivation Behind Green Home Purchase

- Operational Cost Savings
- Improved Health

Source: McGraw-Hill Construction, *The Green Homeowner SMP*, 2007

Quality Becomes Most Important

Motiv
Gree

→ Top

Important

Create a better c
to retail

The ri

Expanding business v
interested in C

Lowering

Stay ahead of tl

Benefit from pu
Green Bui

Limit expo

Green Home Buyers: Motivation Behind Green Home Purchase

→ Operational Cost
Savings

→ Improved Health

Source: McGraw-Hill Construction, *The Green
Homeowner SMR*, 2007

0%

20%

40%

60%

80%

■ Somewhat Important

McGraw Hill
CONSTRUCTION

Health is a Top Motivator for Building or Buying a Green Home

RCLCO survey found that ~42% of buyers would be motivated to purchase a green home based on health benefits, compared with only 17% for energy savings and 12% for the environment.

Buyers who are aware of the link between IAQ and illnesses are unwilling to cut corners to protect the health of their families.

What is a **Healthy** Home?

Healthy Homes are ...

- **Dry**
- **Pest-free**
- **Ventilated**
- **Safe**
- **Clean**
- **Maintained**
- **“Free” of Known Health Risks,**
including:
 - Lead, mercury, asbestos,
 - Tobacco smoke,
 - Radon,
 - CO, NOx, & other combustion pollutants
 - Formaldehyde & other VOC's
 - Asthma triggers (mold & other biologicals, particles, pesticides, and other chemicals)

Green, Healthy Homes Start With



The National Symbols for Energy Efficiency & Indoor Air Quality

Qualified Homes Earn the Label



Built by:

Quality Built Homes

Verified by:

Healthy Home Testing, LLC

Date:

4 / 19 / 2009

New Homes that are Indoor airPLUS qualified meet U.S. Environmental Protection Agency guidelines for improved indoor air quality.

www.epa.gov/indoorairplus

Why Do Consumers **Care** About Indoor Air Quality?

1,800,000

**# of ER Visits per year due to
Asthma in the U.S.**

19%

**... of U.S. Households have at
least One person with Asthma**



Which families have
asthma?





20-50%

Increased risk of
asthma
in damp houses



“My House is Killing Me”



How did this
woman get
lung cancer?





“People come into my office and say Doc Price I just don’t understand it. How can this happen to me? I don’t smoke. Nobody ever smokes around me. How can I have lung cancer?”

Dr. Lane Mathis Price

**SURGEON GENERAL's WARNING:
Radon causes lung cancer.**

“I’m a survivor of radon induced lung cancer...
A simple radon test at the time we bought our home in 1988 would have alerted me to fix our house before we moved in. If I’d only known...”



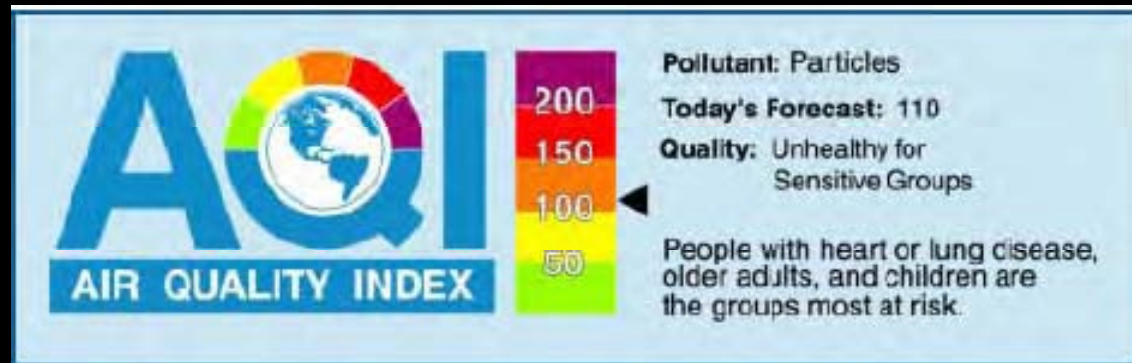
Elizabeth Hoffmann
CanSAR
(Cancer Survivors Against Radon)

1 in 15



**Homes
with radon
above 4 pCi/L**

When outside air is unhealthy ...



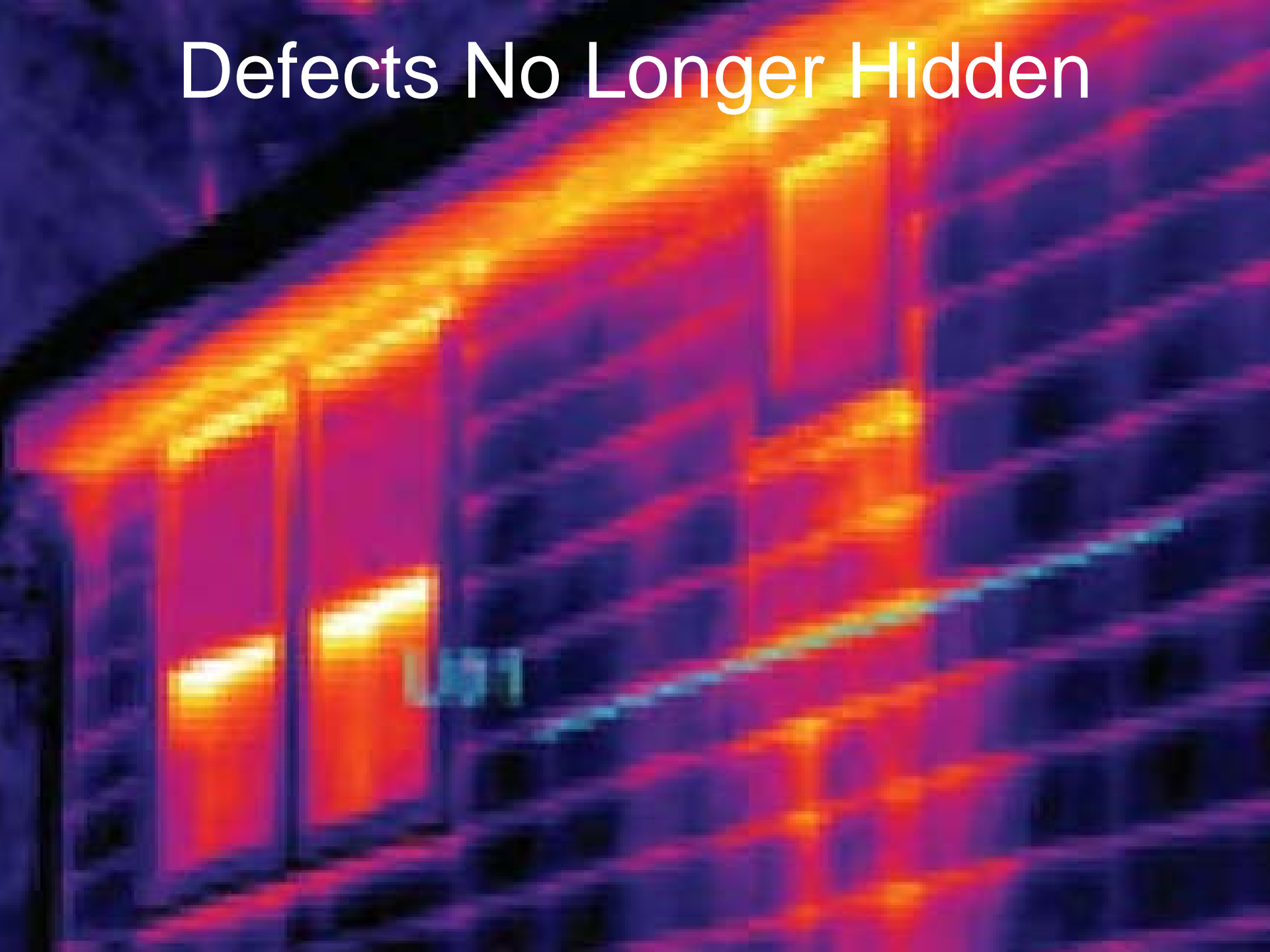
Stay Inside?

2 to 5 times

**EPA estimates 2 to 5 times higher
chemical pollutant levels indoors**

Why Do Builders **Worry** About Indoor Air Quality?

Defects No Longer Hidden



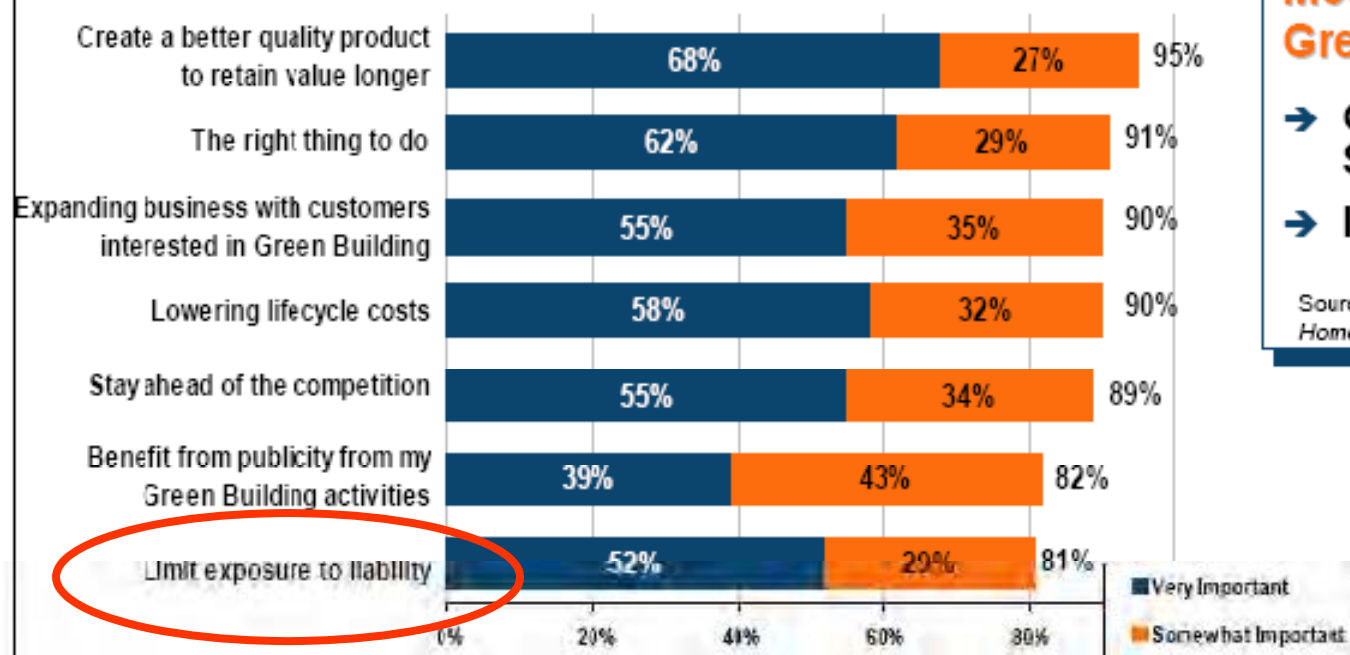
Defects Are Expensive to Fix



Quality Becomes Most Important Motivation for 2008 Builders to Build Green

→ Top Motivator in 2006: “Right thing to do”

Important Motivations Behind Building Green according to 2008 builders

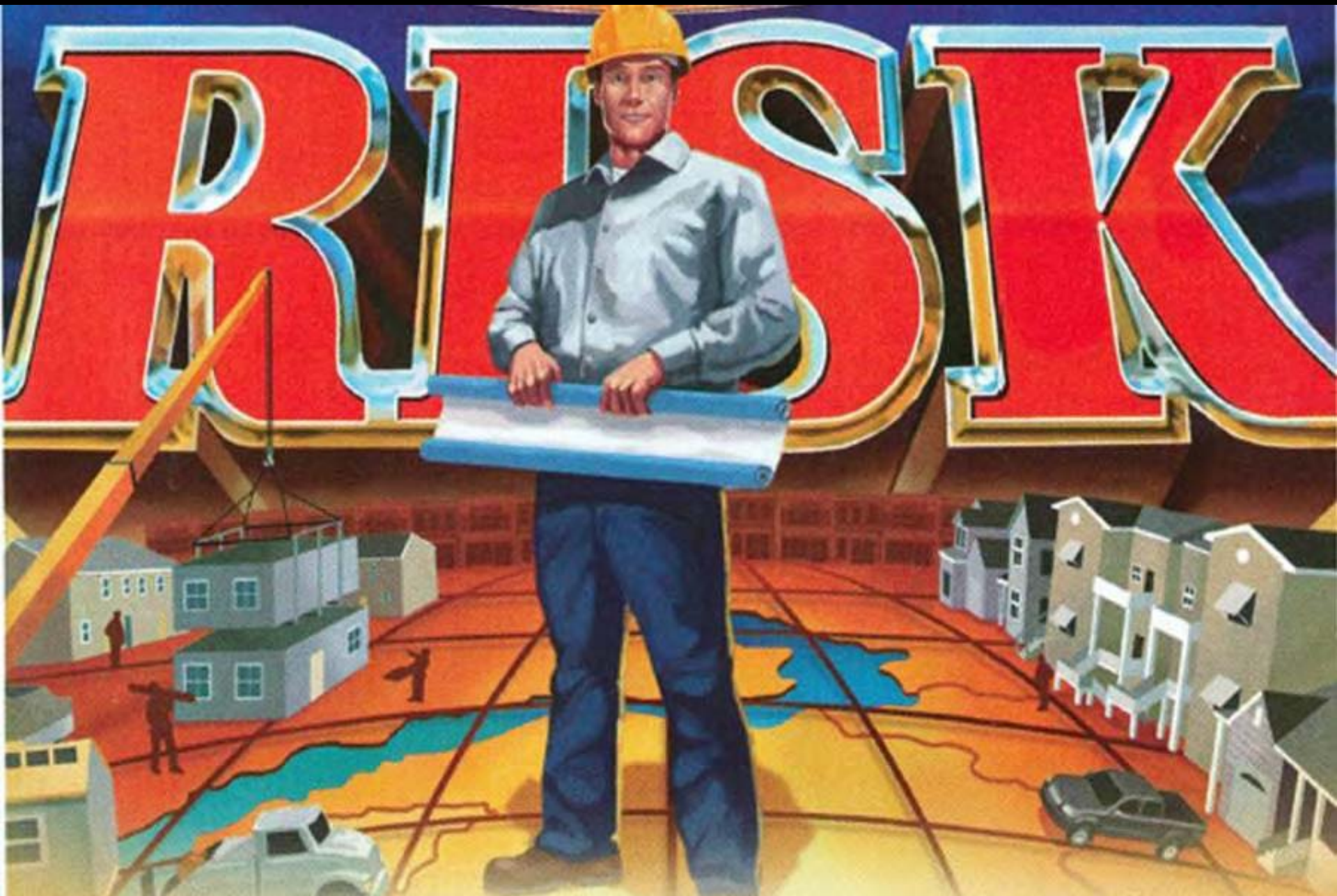


Green Home Buyers: Motivation Behind Green Home Purchase

- Operational Cost Savings
- Improved Health

Source: McGraw-Hill Construction, *The Green Homeowner SMP*, 2007

It's All About Business



How Do Raters **Sell** Indoor airPLUS?

Solutions

A thermal image of a house at night, showing heat loss through the roof and walls. The roof is a prominent bright yellow/orange shape against a dark blue background. The walls and windows are also visible in various shades of red and orange, indicating heat escaping from the interior. The image is used to illustrate the importance of proper insulation and energy efficiency in building construction.

Help builders avoid comfort
callbacks, Condensation/Frost on
Windows, Mold, etc.

Some Defects Are Mysterious





**How many HVAC
contractors own
a copy?**

Happier Customers

“We decided to build a new house after restoring and residing in two 100-year-old homes in a row. We didn't even know the health problems attributed to those old drafty houses until we had our son. After running some low-level allergy symptoms for about a year, we moved into our new home which is Indoor airPLUS certified. The health issues cleared up immediately - for all of us. It's amazing what a little clean air can do!”



Indoor airPLUS
Homeowner in
Oklahoma City

Keeping Up with Competition



CRAWFORD BUILDERS, INC.

ABOUT SERVICES PORTFOLIO WHY CRAWFORD? TESTIMONIALS CONTACT US

"WE NEVER BUILD THE SAME HOUSE TWICE."

"We create truly customized homes."

Crawford Builders, Inc. is a designated Earth Craft, Energy Star, and EPA indoor airPLUS customized home builder located in Williamsburg, Virginia. Our quality, expertise, and enthusiasm translates into each home we build.

we sell

EARTH CRAFT HOUSE

ENERGY STAR

EPA Indoor airPLUS

Our Unique House & Home Approach
provides expertise for both the technical and aesthetic parts of the home building process.

Technical
We utilize the most qualified architectural engineers to create your dream home.

Aesthetic
Our interior designer can help you realize your new custom home's potential!



Awards

Add to collection



How To **Rate** Indoor airPLUS

How Verification Works

1. Inspect

EPA Indoor airPLUS Verification Checklist

Address or Dist/Loc: _____ Date: _____ Verified by: _____

City/State/Zip: _____

| Section | Requirements (see Indoor airPLUS Construction Specifications for details) | NA | Builder | Rater |
|---------------------|---|--------------------------|--------------------------|--------------------------|
| Water Management | 1.1 Site & foundation drainage: sloped grade, protected down this, & foundation floor drains | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1.2 Ceiling must be below ceiling finish & no condensation (Exception - see specific allow) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1.3 Foundation wall: steep-profile or water-proofed (Exception for houses without below-grade walls) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1.4 Basement/crawlspace insulated & conditioned (Exceptions - see specifications) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Water Management: Roof Assembly | | | |
| | 1.5 Continuous drainage plane behind exterior cladding, properly flashed to foundation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1.6 Window & door openings fully flashed | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Water Management: Roof Assembly | | | |
| | 1.7 Continuous membrane about water a minimum of 1" from foundation (Except in dry climates) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1.8 Fully flashed roof/roofline intersections (step & kick-out flashings & roof penetrations) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Moisture Control | 1.9 Bathroom membranes installed at valleys & penetrations (Except in dry climates) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1.10 Ice backing installed at eaves (Except in Climate Zones 1 - 4) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Moisture Management | | | |
| | 1.11 Moisture-resistant exterior/prefabricated systems installed (i.e., flashing, tub/shower backing, & piping) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1.12 Moisture barriers installed on interior side of exterior walls with high condensation potential | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 1.13 No wet or water-damaged materials attached to building assemblies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 2.1 Approved non-moisture-resistant insulation (Exception - see specifications) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 2.2 Two ration test with & infiltration/blowdown for follow-up actions provided for leakage (Additional see specifications) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 2.3 Foundation joints & penetrations sealed, including all tight-seal covers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 2.4 Concrete-grade reinforced masonry installed at all openings that cannot be fully sealed (e.g., attic vents) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| HVAC | 4.1 HVAC room loads calculated, documented, system design documented, coils matched | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 4.2 Duct system design documented & properly installed OR duct system tested (check box if tested) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 4.3 No air handling equipment or ductwork installed in garage, combustion or burner required in adjacent enclosure | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 4.4 Return pressure balanced using transfer grille or jump ducts as required OR tested (check box if tested) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 4.5 Whole house ventilation system installed to meet ASHRAE 62.2 requirements | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 4.6 Local exhaust ventilation to outdoors installed for baths, kitchens, clothes dryer, central vacuum system, etc. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 4.7 Central forced-air HVAC systems have minimum MERV 11 filter, no filter bypass, & no return generators | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 4.8 Mechanical dehumidification system or central HVAC dehumidification controls installed in warm humid climate only | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Combustion Source Controls | | | |
| | 5.1 Gas heat direct venting, off heat & water heater: proper vented or direct vented (Exceptions - see specifications) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Combustion Products | 5.2 Fireplace/heating above vented outdoors & must extend above roofline/ventilation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 5.3 Certified CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 5.4 Leaking prohibited in common areas outside meeting at least 20' from building opening. (Initially tested house only) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Attached Gas Appliance | | | |
| | 5.5 Common vented gas furnace & gas water heater installed before installation of ductwork & tested for leaks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 5.6 Exhaust fan minimum 70 cfm, rated for continuous use installed in garage & vented to outdoors (optional) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 6.1 Certified low-VOC materials used (i.e., plywood, OSB, MDF, cabinetry) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 6.2 Certified low-VOC or no-VOC interior paints & finishes used | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 6.3 Carpet, adhesives, & combine quality for CRI Green Label Plus or Green Label testing program | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 6.4 HVAC system & ductwork tested for air leakage, clean, & properly installed | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Final | 7.2 Home ventilation balance occupancy OR indoor ventilation instructions provided for buyer | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | 7.3 Completed checklist & other required documentation provided for buyer | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Rater/Provider: | Builder: | | | |
| Company: | Company: | | | |
| Signature: | Signature: | | | |

Guidance for Completing the EPA Indoor airPLUS Verification Checklist:

- Only ENERGY STAR Qualified Homes verified to comply with these specifications can earn the "EPA Indoor airPLUS" label. See EPA Indoor airPLUS Construction Specifications for full description of requirements, terms, exceptions, abbreviations, references, and climate map used in this checklist. Verification is not complete until this checklist is completed in full and signed.
- Check one box per line: "NA", "Builder Verified", or "Rater Verified". "NA" applies to specifications that do not apply for specific conditions (e.g., climate) according to Exceptions described in the EPA Indoor airPLUS Construction Specifications. Check either "Builder Verified" or "Rater Verified" for all other items. Builder must sign the verification checklist if any items are checked in the "Builder Verified" column, and by so doing accepts full responsibility for verifying that those items have met EPA Indoor airPLUS requirements.
- When using Performance Alternatives (see 4.2 & 4.4), check tested box and include testing documentation in HERS/BOP Etc.
- Builder provides one copy of the completed checklist to homeowners. Provider or Rater files a copy with HERS/BOP and ENERGY STAR documentation (i.e., Thermal Bypass Checklist) for the home.
- The Checklist may be completed for a batch of homes using a RESNET-approved sampling protocol when qualifying homes as ENERGY STAR. For example, if the approved sampling protocol requires rating one in seven homes, then the checklist will be completed for the one home that was rated.

Note: The EPA Indoor airPLUS Construction Specifications are designed to contribute to improved indoor air quality (IAQ) in new homes compared with code-built homes. However, these measures alone cannot prevent all IAQ problems. Rather, EPA Indoor airPLUS is a way to reduce the likelihood of experiencing IAQ problems. Occupant behavior is also important for IAQ. For example, products used in the home after occupancy and smoking inside may both negatively impact the home's IAQ and the performance of the specified EPA Indoor airPLUS measures.

Comments:

For more information, visit epa.gov/indoorairplus



3. Label Here



2. Sign Here

How Verification Works



EPA
United States
Environmental Protection
Agency

Indoor Air Quality

Address or District:
City/State/Zip:

Section: **Verified by**

| | N/A | Builder | Rater |
|--|-----|---------|-------|
| Water-Managed Sills and Foundation | | | |
| 1.1 Site & Foundation drainage: sloped | | | |
| 1.2 Capillary break below concrete slab | | | |
| 1.3 Foundation wall damp-proofed or | | | |
| 1.4 Basement/crawlspaces insulated | | | |
| Water-Managed Wall Assemblies | | | |
| 1.5 Continuous drainage plane behind | | | |
| 1.6 Window & door openings fully flashed | | | |
| Water-Managed Roof Assemblies | | | |
| 1.7 Gutter/downspouts direct water a | | | |
| 1.8 Fully finished roof/wall intersections | | | |
| 1.9 Bituminous membranes installed at | | | |
| 1.10 Ice blocking installed at eaves (Eave | | | |
| Interior Water Management | | | |
| 1.11 Moisture-resistant wall/ceiling/joint | | | |
| 1.12 No vapor barriers installed on inter | | | |
| 1.13 No wet or water-damaged material | | | |
| Radon | | | |
| 2.1 Approved radon-resistant features | | | |
| 2.2 Two radon test kits & instructions | | | |
| Radon | | | |
| 3.1 Foundation joints & penetrations s | | | |
| 3.2 Compression-proof radon-resistant s | | | |
| 4.1 HVAC room loads calculated, docu | | | |
| 4.2 Duct system design documented at | | | |
| 4.3 No air handling equipment or ducts | | | |
| 4.4 Rooms pressure-balanced using b | | | |
| 4.5 Whole house ventilation system in | | | |
| 4.6 Local exhaust ventilation to outdoor | | | |
| 4.7 Central forced-air HVAC system(s) | | | |
| 4.8 Additional dehumidification system(s) | | | |
| Combustion Source Controls | | | |
| 5.1 Gas heat direct vented off heat & v | | | |
| 5.2 Fireplace/heating stove vented to | | | |
| 5.3 Certified CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720 | | | |
| 5.4 Smoking prohibited in common areas outside smoking at least 25' from building openings (Multi-family homes only) | | | |
| Attached Garage Isolation | | | |
| 5.5 Common wall/callings doors & garage air-sealed before installation (if built); house doors gasketed & closed installed | | | |
| 5.6 Exhaust fan (minimum 70 cfm, rated for continuous use) installed in garage & vented to outdoors (controls optional) | | | |
| 6.1 Certified low-formaldehyde pressed wood materials used (i.e., plywood, OSB, MDF, cabinetry) | | | |
| 6.2 Certified low-VOC or no-VOC interior paints & finishes used | | | |
| 6.3 Carpet, adhesive, & combine qualify for CRI Green Label Plus or Green Label testing program | | | |
| 7.1 HVAC system & ductwork certified dry, clean, & properly installed | | | |
| 7.2 Home ventilated before occupancy OR initial ventilation instructions provided for buyer | | | |
| 7.3 Completed checklist & other required documentation provided for buyer | | | |


Rater/Provider: _____ Builder: _____
Company: _____ Company: _____
Signature: _____ Signature: _____

Check 1 box per row

How Verification Works

N/A = Exceptions

See Construction Specifications
for details.



| Verified by | | Builder | Rater |
|-------------|--|---------|-------|
| N/A | | | |

Water-Managed Site

1.1 Site & Foundation

1.2 Capillary break

1.3 Foundation wall

1.4 Basement/crawl

Water-Managed Wall

1.5 Continuous Wall

1.6 Window & door

Water-Managed Roof

1.7 Gutter/downspout

1.8 Fully finished roof

1.9 Bituminous membrane

1.10 Ice blocking test

Interior Water Manage

1.11 Moisture-resistant

1.12 No vapor barrier

1.13 No wet or water

Radon

2.1 Approved radon

2.2 Two radon test

Radon

3.1 Foundation joint

3.2 Compression

Radon

4.1 HVAC room test

4.2 Duct system test

4.3 No air handling

Radon

4.4 Room pressure

4.5 Whole house vent

4.6 Local exhaust vent

4.7 Central forced-air

4.8 Additional details

Combustion Source

5.1 Gas heat direct vent

5.2 Fireplace/hearth

5.3 Certified CO alarm installed in each sleeping zone (e.g., common hallway) according to NFPA 720

5.4 Smoking prohibited in common areas outside smoking at least 25' from building openings (Multi-family homes only)

Attached Garage Isolation

5.5 Common wall/callings doors & garage air-sealed before installation (bottled, house doors guided & closed installed)

5.6 Exhaust fan (minimum 70 cfm, rated for continuous use) installed in garage & vented to outdoors (controls optional)

6.1 Certified low-formaldehyde pressed wood materials used (i.e., plywood, OSB, MDF, cabinetry)

6.2 Certified low-VOC or no-VOC interior paints & finishes used

6.3 Carpet, adhesive, & combine quality for CRI Green Label Plus or Green Label testing program

7.1 HVAC system & ductwork verified dry, clean, & properly installed

7.2 Home ventilated before occupancy OR latent ventilation instructions provided for buyer

7.3 Completed checklist & other required documentation provided for buyer

Rater/Provider: _____ **Builder:** _____

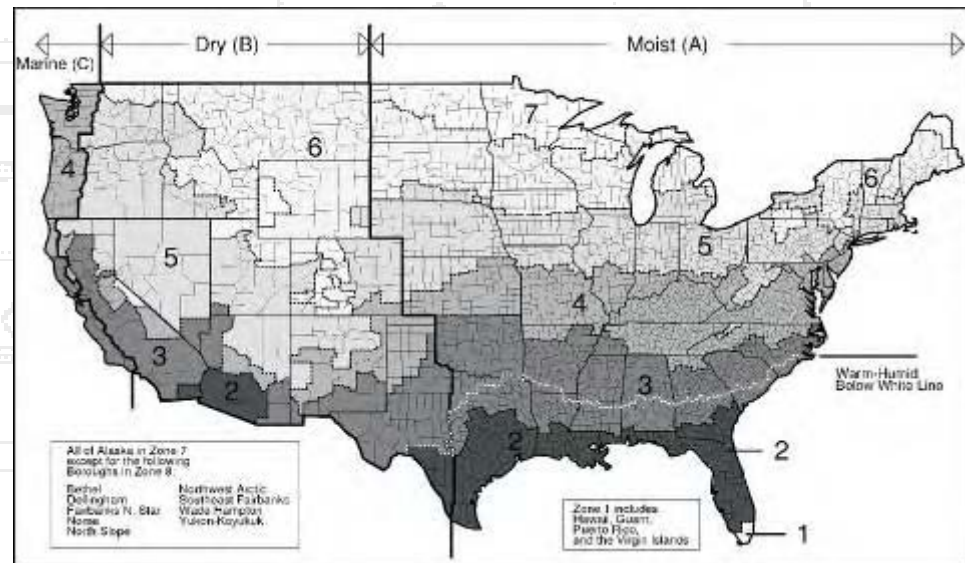
Company: _____ **Company:** _____

Signature: _____ **Signature:** _____

For Climate Exceptions:

Use Figure 301.1, 2006 IECC®

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Reproduced with permission. All rights reserved.



How Verification Works



| EPA Indoor airPLUS | | Verified by | | |
|---|--|--|---------|-------|
| Address or District | | | | |
| City/State/Zip | | | | |
| Section | Requirement | N/A | Builder | Rater |
| Moisture Control | Water-Managed Sills and Foundation | | | |
| | 1.1 Site & foundation drainage sloped | | | |
| | 1.2 Capillary break below concrete slab | | | |
| | 1.3 Foundation wall damp-proofed or | | | |
| | 1.4 Basement/crawlspace installed | | | |
| | Water-Managed Wall Assemblies | | | |
| | 1.5 Continuous drainage plane behind | | | |
| | 1.6 Window & door openings fully flashed | | | |
| | Water-Managed Roof Assemblies | | | |
| | 1.7 Gutter/downspouts direct water a | | | |
| Radon | 1.8 Fully finished radonwall intersections | | | |
| | 1.9 Bituminous membranes installed at | | | |
| | 1.10 Ice blocking installed at eaves (Enc | | | |
| | Indoor Water Management | | | |
| | 1.11 Moisture-resistant wall/sheetrock | | | |
| | 1.12 No vapor barriers installed on inte | | | |
| | 1.13 No wet or water-damaged material | | | |
| | 2.1 Approved radon-resistant features | | | |
| | 2.2 Two radon test kits & instructions | | | |
| | HVAC | 3.1 Foundation joints & penetrations s | | |
| 3.2 Continuous proof radon-tight screen | | | | |
| 4.1 HVAC room loads calculated, docu | | | | |
| 4.2 Duct system design documented at | | | | |
| 4.3 No air handling equipment or ducts | | | | |
| 4.4 Rooms pressure balanced using b | | | | |
| 4.5 Whole house ventilation system in | | | | |
| 4.6 Local exhaust ventilation to outdo | | | | |
| 4.7 Central forced-air HVAC system(s) | | | | |
| 4.8 Additional dehumidification system(s) | | | | |
| Combustion Safety Controls | 5.1 Gas heat direct vented off heat & v | | | |
| | 5.2 Fireplace/heating stove vented to | | | |
| | 5.3 Certified CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720 | | | |
| | 5.4 Smoking prohibited in common areas outside smoking at least 25' from building openings (Multi-family homes only) | | | |
| | Attached Garage Isolation | | | |
| | 5.5 Common wall/callings doors & garage air-sealed before installation (sealed, house doors gasketed & closed installed) | | | |
| | 5.6 Exhaust fan (minimum 70 cfm, rated for continuous use) installed in garage & vented to outdoors (controls optional) | | | |
| | 6.1 Certified low-formaldehyde pressed wood materials used (i.e., plywood, OSB, MDF, cabinetry) | | | |
| | 6.2 Certified low-VOC or no-VOC interior paints & finishes used | | | |
| | 6.3 Carpet, adhesive, & combine qualify for CRI Green Label Plus or Green Label testing program | | | |
| Final | 7.1 HVAC system & ductwork verified dry, clean, & properly installed | | | |
| | 7.2 Home ventilated before occupancy OR initial ventilation instructions provided for buyer | | | |
| | 7.3 Completed checklist & other required documentation provided for buyer | | | |

Builder = Self-certified

Specifications with no checkbox in the “**Builder**” column cannot be builder-verified.

Builder must sign completed checklist.

How Verification Works



EPA
United States
Environmental Protection
Agency

Indoor Air Quality

Address or District: _____
City/State/Zip: _____

| Section | | Builder | Rater |
|--|--|---------|---------|
| Water-Managed Sills and Foundation | | N/A | Builder |
| 1.1 Site & foundation drainage, sloped | | | |
| 1.2 Capillary break below concrete slab | | | |
| 1.3 Foundation wall damp-proofed or | | | |
| 1.4 Basement/crawlspace insulated | | | |
| Water-Managed Wall Assemblies | | | |
| 1.5 Continuous drainage plane behind | | | |
| 1.6 Window & door openings fully flashed | | | |
| Water-Managed Roof Assemblies | | | |
| 1.7 Gutter/downspouts direct water a | | | |
| 1.8 Fully finished roofwall intersections | | | |
| 1.9 Bituminous membranes installed at | | | |
| 1.10 Ice blocking installed at eaves (Eave | | | |
| Interior Water Management | | | |
| 1.11 Moisture-resistant wallboard/gypsum | | | |
| 1.12 No vapor barriers installed on interior | | | |
| 1.13 No wet or water-damaged materials | | | |
| Radon | | | |
| 2.1 Approved radon-resistant features | | | |
| 2.2 Two radon test kits & instructions | | | |
| Exterior | | | |
| 3.1 Foundation joints & penetrations s | | | |
| 3.2 Continuous-proof rodent/bird screens | | | |
| 4.1 HVAC room loads calculated, docu | | | |
| 4.2 Duct system design documented at | | | |
| 4.3 No air handling equipment or ducts | | | |
| 4.4 Rooms pressure balanced using b | | | |
| 4.5 Whole house ventilation system in | | | |
| 4.6 Local exhaust ventilation to outdoor | | | |
| 4.7 Central forced-air HVAC system(s) | | | |
| 4.8 Additional dehumidification system(s) | | | |
| Combustion Source Controls | | | |
| 5.1 Gas heat direct vented off heat & v | | | |
| 5.2 Fireplace/heating stove vented to | | | |
| 5.3 Certified CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720 | | | |
| 5.4 Smoking prohibited in common areas outside smoking at least 25' from building openings (Multi-family homes only) | | | |
| Attached Garage Isolation | | | |
| 5.5 Common wall/callings doors & garage air-sealed before installation (if built), house doors gasketed & closed installed | | | |
| 5.6 Exhaust fan (minimum 70 cfm, rated for continuous use) installed in garage & vented to outdoors (controls optional) | | | |
| 6.1 Certified low-formaldehyde pressed wood materials used (i.e., plywood, OSB, MDF, cabinetry) | | | |
| 6.2 Certified low-VOC or no-VOC interior paints & finishes used | | | |
| 6.3 Carpet, adhesive, & combine qualify for CRI Green Label Plus or Green Label testing program | | | |
| 7.1 HVAC system & ductwork certified dry, clean, & properly installed | | | |
| 7.2 Home ventilated before occupancy OR initial ventilation instructions provided for buyer | | | |
| 7.3 Completed checklist & other required documentation provided for buyer | | | |

Rater/Provider: _____ Builder: _____
Company: _____ Company: _____
Signature: _____ Signature: _____

Rater = All the rest ...

Make sure there is one
check per row.

How Verification Works

EPA Indoor airPLUS Verification Checklist

Address or District: 123 Any street Date: 4/13/09 Verified by: [Signature]
City/State/Zip: Anytown, VA

| Section | Requirements (see Indoor airPLUS Construction Specifications for details) | NR | Builder | Rater |
|----------------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|
| Moisture Control | Water-Managed Site and Foundation | | | |
| | 1.1 Site & foundation drainage: sloped grade, protected drain tile, & foundation floor drains | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 1.2 Capillary break below concrete slabs & in crawlspaces (Exception - see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 1.3 Foundation wall: damp proofed or water-proofed (Exception for homes without below-grade walls) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 1.4 Sillseals/crawlspaces insulated & conditioned (Exceptions - see specification) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | Water-Managed Wall Assemblies | | | |
| | 1.5 Continuous drainage plane behind exterior cladding, properly flashed to foundation | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 1.6 Window & door openings fully flashed | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | Water-Managed Roof Assemblies | | | |
| | 1.7 Gutter/downspouts direct water a minimum of 5' from foundation (Except in dry climates) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Radon | 1.8 Fully flashed roof/wall intersections (step & kick-out flashing) & roof penetrations | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 1.9 Bituminous membrane installed at valleys & penetrations (Except in dry climates) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 1.10 Ice flashing installed at eaves (Except in Climate Zones 3 - 4) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | Interior Water Management | | | |
| | 1.11 Moisture-resistant materials/protective systems installed (i.e., flooring, tub/shower backing, & piping) | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 1.12 No vapor barriers installed on interior side of exterior walls with high condensation potential | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 1.13 No wet or water-damaged materials enclosed in building assemblies | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 2.1 Approved radon-resistant features installed (Exception - see specification) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 2.2 Two-sides test kit & instructions/guidance for follow-up actions provided for buyer (Advisory-see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 3.1 Foundation joints & penetrations sealed, including air-tight sump covers | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Mechanical | 3.2 Corrosion proof rodent/leaf screens installed at all openings that cannot be fully sealed (e.g., attic vents) | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 4.1 HVAC room loads calculated, documented; system design documented; coils matched | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 4.2 Duct system design documented & properly installed OR duct system tested (check box if tested) <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 4.3 No air handling equipment or ductwork installed in groups; continuous air barrier required in adjacent assemblies | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 4.4 Rooms pressure balanced (using transfer grille or jump duct) as required OR tested (check box if tested) <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 4.5 Whole house ventilation system installed to meet ASHRAE 62.2 requirements | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 4.6 Local exhaust ventilation to outdoors installed for baths, kitchens, clothes dryers, central vacuum system, etc. | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 4.7 Central forced-air HVAC system(s) have minimum MERV 8 filter, no filter bypass, & no ozone generators | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Combustion Safety Controls | 4.8 Additional dehumidification system(s) or central HVAC dehumidification controls installed (in warm-humid climates only) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 5.1 Gas heat direct vented; oil heat & water heaters power vented or direct vented (Exceptions - see specifications) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 5.2 Fireplace/heating stoves vented outdoors & meet emissions/efficiency standards/restrictions | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 5.3 Certified CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720 | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 5.4 Smoking prohibited in common areas, outside smoking at least 25' from building openings (Multi-family homes only) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Attached Garage Isolation | | | |
| Materials | 5.5 Concrete walkways/driveways & garage(s) as-needed before insulation installed; house doors gasketed & closed installed | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 5.6 Exhaust fan (minimum 70 cfm, rated for continuous use) installed in garage & vented to outdoors (exhaust optional) | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 6.1 Certified low-formaldehyde pressed wood materials used (i.e., plywood, OSB, MDF, cabinetry) | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Final | 6.2 Certified low-VOC or no-VOC interior paints & finishes used | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 6.3 Carpet, adhesives, & cushion qualify for CRI Green Label Plus or Green Label testing program | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 7.1 HVAC system & ductwork verified dry, clean, & properly installed | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| | 7.2 Home ventilated before occupancy OR initial ventilation instructions provided for buyer | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Rater/Builder | 7.3 Completed checklist & other required documentation provided to buyer | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | Rater/Provider: <u>Tess N. Certify</u> Builder: <u>Bill Dittwright</u> | | | |
| | Company: <u>Healthy Home Testing Services</u> Company: <u>Quality Built Homes</u> | | | |
| Signatures | Signature: <u>Tess N. Certify</u> Signature: <u>Bill Dittwright</u> | | | |

Rater and Builder both sign the completed checklist.

Rater files checklist with HERS rating documents.

What About ENERGY STAR v3?

EPA Indoor airPLUS Verification Checklist

Address or On/Off: 123 Anystreet
City/State/Zip: Anytown, VA Date: 4/13/09 Verified by:

| Section | Requirements (see Indoor airPLUS Construction Specifications for details) | N/A | Builder | Rater |
|---|---|-------------------------------------|-------------------------------------|--------------------------|
| Moisture Control | 1.1 Site & foundation drainage: sloped grade, protected drain tile, & foundation floor drains | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 1.2 Capillary break below concrete slabs & in crawlspaces (Exception - see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 1.3 Foundation wall damp proofed or water-proofed (Exception for homes without below-grade walls) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 1.4 Basements/crawlspaces insulated & conditioned (Exceptions - see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | Water-Managed Wall Assemblies | | | |
| | 1.5 Continuous drainage plane behind exterior cladding, properly flashed to foundation | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 1.6 Window & door openings fully flashed | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | Water-Managed Roof Assemblies | | | |
| | 1.7 Gutter/downspouts direct water a minimum of 5' from foundation (Exception in dry climates) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 1.8 Fully flashed roof/wall intersections (ramp & kick-out flashing) & roof penetrations | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 1.9 Bituminous membrane installed at valleys & penetrations (Exception in dry climates) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 1.10 Ice flashing installed at eaves (Exception in Climate Zones 1 - 4) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Radon | 2.1 Approved radon-resistant features installed (Exception - see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 2.2 Two radon test kits & instructions/guidance for follow-up actions provided for buyer (advisory-see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 2.3 Foundation joints & penetrations sealed, including air-tight sump covers | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 2.4 Corrosion proof rodent/bird screens installed at all openings that cannot be fully sealed (e.g., attic vents) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 2.5 HVAC room leads calculated, documented; system design documented; coils matched | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 2.6 Duct system design documented & properly installed OR duct system tested (check box if tested) <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 2.7 No air handling equipment or ductwork installed in groups; continuous air barrier required in adjacent assemblies | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 2.8 Rooms pressure balanced (using transfer grille or jump duct) as required OR tested (check box if tested) <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| HVAC | 4.1 Whole house ventilation system installed to meet ASHRAE 62.2 requirements | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 4.2 Local exhaust ventilation to outdoors installed for baths, kitchens, clothes dryers, central vacuum system, etc. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 4.3 Central forced-air HVAC system(s) have minimum MERV 8 filter, no filter bypass, & no ozone generators | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 4.4 Additional dehumidification system(s) or central HVAC dehumidification controls installed (in warm-humid climates only) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | Compassion Source Controls | | | |
| | 5.1 Gas heat direct vented; oil heat & water heaters power vented or direct vented (Exceptions - see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 5.2 Fireplace/heating stoves vented outdoors & meet emissions/efficiency standards/restrictions | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 5.3 Certified CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Combustion Pollutants | 5.4 Smoking prohibited in common areas, outside smoking at least 25' from building openings (Multi-family homes only) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | Attached Garage Isolation | | | |
| 5.5 Common walls/partitions (house & garage) as needed before insulation installed; house doors gasketed & closed installed | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 5.6 Exhaust fan (minimum 70 cfm, rated for continuous use) installed in garage & vented to outdoors (exhaust optional) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| Materials | 6.1 Certified low-formaldehyde pressed wood materials used (i.e., plywood, OSB, MDF, cabinetry) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 6.2 Certified low-VOC or no-VOC interior paints & finishes used | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 6.3 Carpet, adhesives, & options qualify for CRI Green Label Plus or Green Label testing program | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Final | 7.1 HVAC system & ductwork verified dry, clean, & properly installed | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 7.2 Home ventilated before occupancy OR initial ventilation instructions provided for buyer | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | 7.3 Completed checklist & other required documentation provided for buyer | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Rater/Provider: Tess N. Certify Builder: Bill Dittwright
Company: Healthy Home Testing Services Company: Quality Built Homes
Signature: Tess N. Certify Signature: Bill Dittwright

DRAFT ENERGY STAR Qualified Homes 2011
Water Management System Rater Checklist¹

Home Address: _____ City: _____ State: _____
Inspector: _____ Date: _____

| Inspector | Builder | Rater | Pass |
|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

DRAFT ENERGY STAR Qualified Homes 2011
Water Management System Builder Checklist²

Home Address: _____ City: _____ State: _____
Inspector: _____ Date: _____

| Inspector | Builder | Rater | Pass |
|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Moisture Control checklists
equivalent = you choose**

What About ENERGY STAR v3?

EPA Indoor airPLUS Verification Checklist

Address or District: 123 Anystreet
City/State/Zip: Anytown, VA Date: 4/13/09 Verified by: _____

| Section | Requirements (see Indoor airPLUS Construction Specifications for details) | N/A | Builder | Rater | |
|---|---|--|-------------------------------------|-------------------------------------|--------------------------|
| Moisture Control | 1.1 Site & foundation drainage: sloped grade, protected drain tile, & foundation floor drains | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 1.2 Capillary break below concrete slabs & in crawlspaces (Exception - see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 1.3 Foundation wall: damp proofed or water-proofed (Exception for homes without below-grade walls) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 1.4 Basements/crawlspaces insulated & conditioned (Exceptions - see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | Water-Managed Wall Assemblies | | | | |
| | 1.5 Continuous drainage plane behind exterior cladding, properly flashed to foundation | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 1.6 Window & door openings fully flashed | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | Water-Managed Roof Assemblies | | | | |
| | 1.7 Gutter/downspout: direct water a minimum of 5' from foundation (Exception in dry climates) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 1.8 Fully flashed roof/wall intersections (step & kick-out flashing) & roof penetrations | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| Interior Water Management | 1.9 Bituminous membrane installed at valleys & penetrations (Exception in dry climates) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 1.10 Ice flashing installed at eaves (Exception in Climate Zones 1-4) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 1.11 Moisture-resistant materials/protective systems installed (i.e., flooring, tub/shower backing, & piping) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 1.12 No vapor barriers installed on interior side of exterior walls with high condensation potential | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 1.13 No wet or water-damaged materials enclosed in building assemblies | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | Breath | 2.1 Approved radon-resistant features installed (Exception - see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | | 2.2 Two-sides test kit & instructions/guidance for follow-up actions provided for buyer (advisory-see specification) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | | 3.1 Foundation joints & penetrations sealed, including air-tight sump covers | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | | 3.2 Corrosion-proof rodent/bird screens installed at all openings that cannot be fully sealed (e.g., attic vents) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | HVAC | 4.1 HVAC room loads calculated, documented, system design documented, code matched | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4.2 Duct system design documented & properly installed OR duct system tested (check box if tested) | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4.3 No air handling equipment or ductwork installed in groups; continuous air barrier required in adjacent assemblies | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4.4 Rooms pressure balanced (using transfer grille or jump duct) as required OR tested (check box if tested) | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| Combustion Pollutants | 4.5 Whole-house combustion system installed to meet ASHRAE 62.2 requirements | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 4.6 Local exhaust ventilation to outdoors installed for baths, kitchens, clothes dryers, central vacuum system, etc. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 4.7 Central forced-air HVAC system(s) have minimum MERV 8 filter, no filter bypass, & no ozone generators | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 4.8 Additional humidification system(s) or central HVAC dehumidification controls installed (in warm-humid climates only) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| Attached Garage Isolation | 5.1 Gas heat direct vented; oil heat & water heaters power vented or direct vented (Exceptions - see specifications) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 5.2 Fireplaces/heating stoves vented outdoors & meet emissions/efficiency standards/restrictions | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 5.3 Certified CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720 | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 5.4 Smoking prohibited in common areas, outside smoking at least 25' from building openings (Multi-family homes only) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| Materials | 6.1 Certified low-formaldehyde pressed wood materials used (i.e., plywood, OSB, MDF, cabinetry) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 6.2 Certified low-VOC or no-VOC interior paints & finishes used | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 6.3 Carpet, adhesives, & cushion qualify for CRI Green Label Plus or Green Label testing program | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 7.1 HVAC system & ductwork verified dry, clean, & properly installed | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| Final | 7.2 Home ventilated before occupancy OR initial ventilation instructions provided for buyer | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| | 7.3 Completed checklist & other required documentation provided for buyer | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

Rater/Provider: Tess N. Certify Builder: Bill Dittwright
Company: Healthy Home Testing Services Company: Quality Built Homes
Signature: Tess N. Certify Signature: Bill Dittwright

DRAFT ENERGY STAR Qualified Homes 2011
HVAC System Quality Installation Contractor Checklist

Home Address: _____ City: _____ State: _____

1. Whole-Building Mechanical Ventilation Design

1.1 Ventilation system designed to meet ASHRAE 62.2-2010 requirements? ☐ Yes ☐ No

1.2 Documentation attached with ventilation system type, location and design details? ☐ Yes ☐ No

1.3 Continuously-operating ventilation and exhaust fans designed to automatically operate during all occupiable hours? ☐ Yes ☐ No

1.4 Recirculated, intermittently-operating whole-house fan located in garage and attics? ☐ Yes ☐ No

2. Heating & Cooling System Design

2.1 Heat Load/ Gain Method: ☐ Manual ☐ Software

2.2 Duct Design Method: ☐ Manual ☐ Software

2.3 Equipment Selection Method: ☐ Manual ☐ Software

2.4 Outdoor Design Temperature Used: ☐ Manual ☐ Software

2.5 Design Load/ Gain Data: ☐ Manual ☐ Software

2.6 Design Sensible Heat Gain: ☐ Manual ☐ Software

2.7 Design Total Heat Load: ☐ Manual ☐ Software

2.8 Design Sensible Heat Ratio (SHR): ☐ Manual ☐ Software

2.9 Design Total Heat Load: ☐ Manual ☐ Software

2.10 Design Airflow: ☐ Manual ☐ Software

2.11 Design Load/ Gain Reserve: ☐ Manual ☐ Software

2.12 Design Airflow/ Capacity: ☐ Manual ☐ Software

3. Ductwork Installation

3.1 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.2 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.3 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.4 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.5 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.6 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.7 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.8 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.9 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.10 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.11 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.12 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.13 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.14 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.15 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.16 Connections to Manufacturer's Model: ☐ Manual ☐ Software

3.17 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4. Ductwork Installation

4.1 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.2 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.3 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.4 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.5 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.6 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.7 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.8 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.9 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.10 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.11 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.12 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.13 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.14 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.15 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.16 Connections to Manufacturer's Model: ☐ Manual ☐ Software

4.17 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5. Ductwork Installation

5.1 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.2 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.3 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.4 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.5 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.6 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.7 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.8 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.9 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.10 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.11 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.12 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.13 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.14 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.15 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.16 Connections to Manufacturer's Model: ☐ Manual ☐ Software

5.17 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6. Ductwork Installation

6.1 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.2 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.3 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.4 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.5 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.6 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.7 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.8 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.9 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.10 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.11 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.12 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.13 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.14 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.15 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.16 Connections to Manufacturer's Model: ☐ Manual ☐ Software

6.17 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7. Ductwork Installation

7.1 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.2 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.3 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.4 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.5 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.6 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.7 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.8 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.9 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.10 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.11 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.12 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.13 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.14 Connections to Manufacturer's Model: ☐ Manual ☐ Software

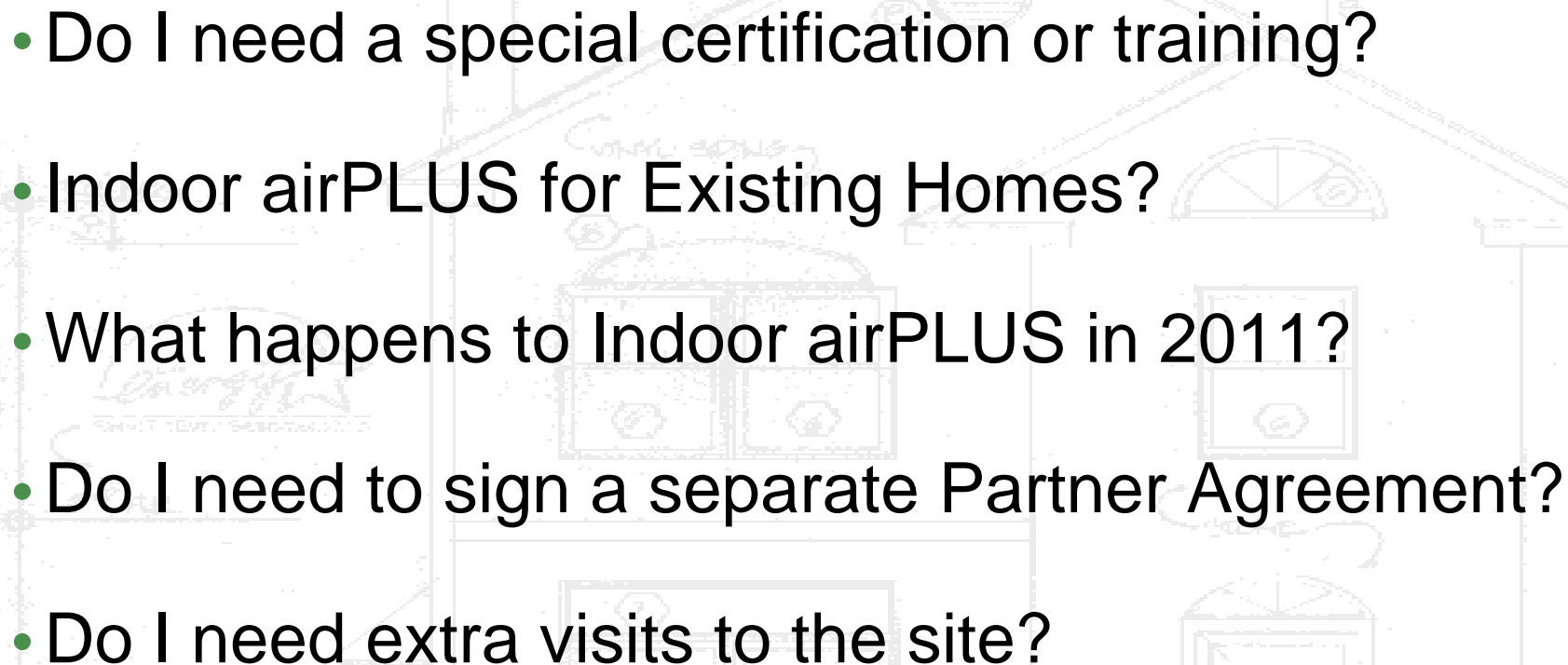
7.15 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.16 Connections to Manufacturer's Model: ☐ Manual ☐ Software

7.17 Connections to Manufacturer's Model: ☐ Manual ☐ Software

**HVAC Checklists streamline
4.1, 4.2, 4.5, 4.6, & 7.1**

FAQ's and Other Tips

- 
- Do I need a special certification or training?
 - Indoor airPLUS for Existing Homes?
 - What happens to Indoor airPLUS in 2011?
 - Do I need to sign a separate Partner Agreement?
 - Do I need extra visits to the site?

Indoor airPLUS Label



Built by:

Quality Built Homes

Verified by:

Healthy Home Testing, LLC

Date:

4 / 19 / 2009

New Homes that are Indoor airPLUS qualified meet U.S. Environmental Protection Agency guidelines for improved indoor air quality.

www.epa.gov/indoorairplus



EPA
United States
Environmental Protection
Agency

EPA 402/C-06/003 | January 2009 | www.epa.gov/indoorairplus

Indoor airPLUS
CONSTRUCTION SPECIFICATIONS

Indoor Air Quality (IAQ)

Let's look inside ...

ENERGY STAR



All EPA Indoor airPLUS qualified homes meet strict guidelines for energy efficiency set by ENERGY STAR, the nationally-recognized symbol for energy efficiency.



Pest Barriers



Moisture Control



**Healthier
Materials**



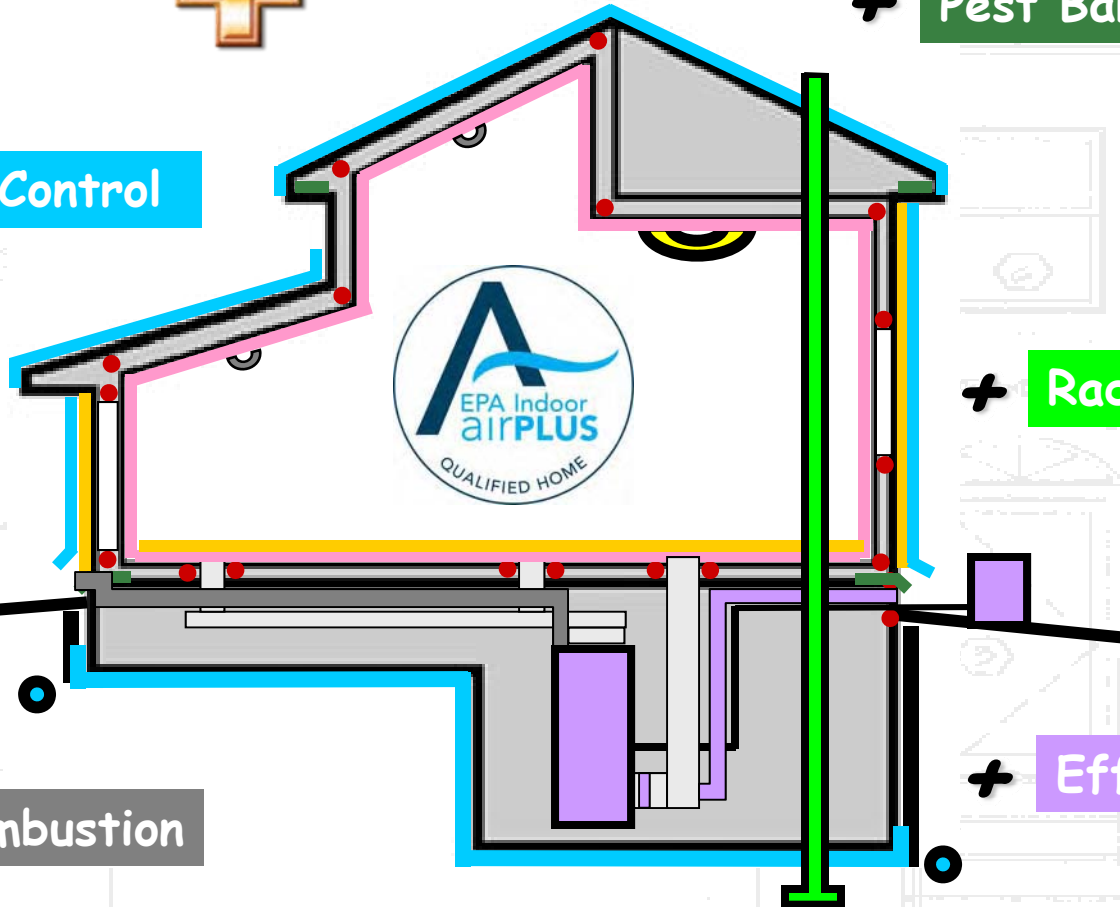
Radon Control



Effective HVAC

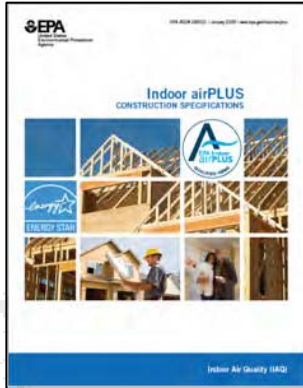


Safe Combustion



Indoor airPLUS

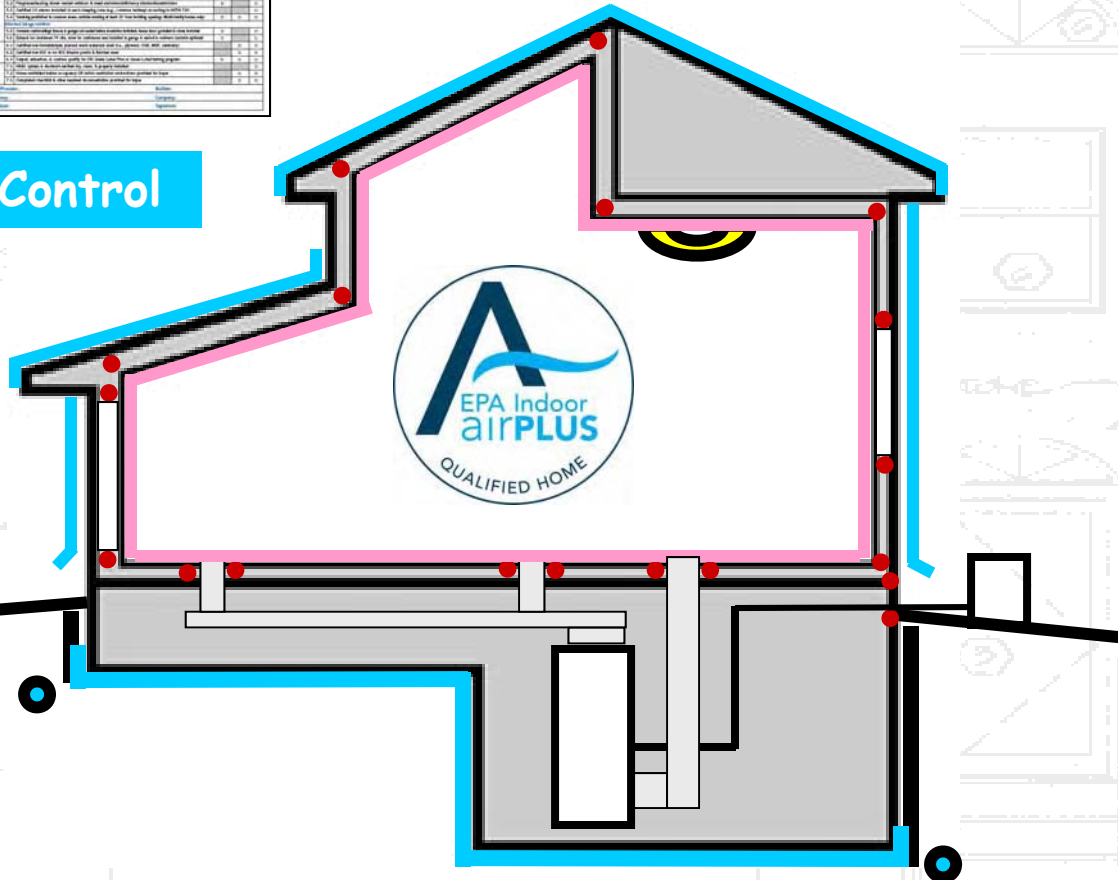
Highlights



Indoor airPLUS Verification Checklist

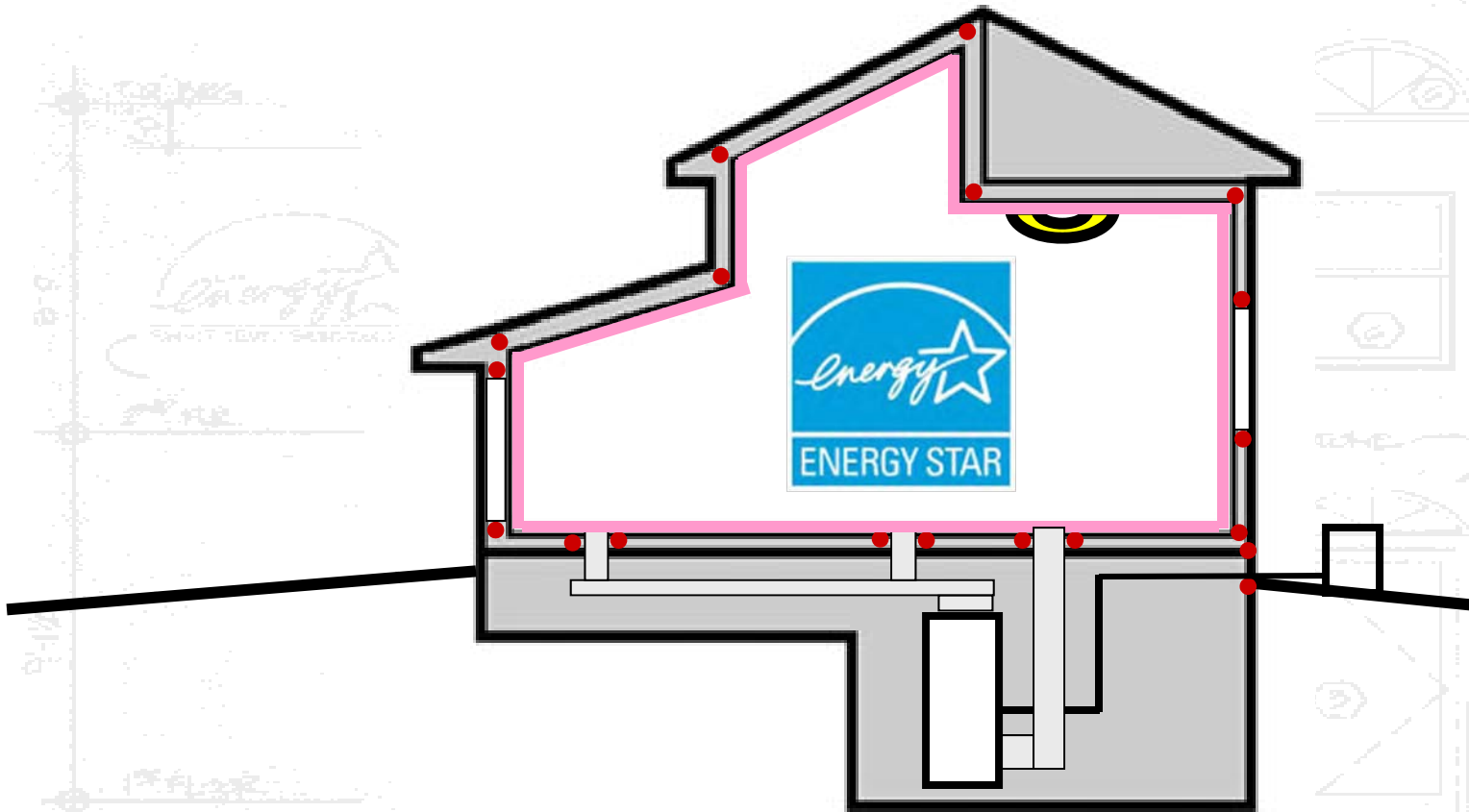
| Section | Item | Pass/Fail | Notes |
|------------------------|-------------------------------|-----------|-------|
| 1. General Information | 1.1. Project Name | | |
| | 1.2. Project Address | | |
| | 1.3. Project Type | | |
| | 1.4. Project Start Date | | |
| | 1.5. Project End Date | | |
| | 1.6. Project Manager | | |
| | 1.7. Project Location | | |
| | 1.8. Project Description | | |
| | 1.9. Project Status | | |
| | 1.10. Project Completion Date | | |
| 2. Building Envelope | 2.1. Foundation | | |
| | 2.2. Walls | | |
| | 2.3. Roof | | |
| | 2.4. Windows | | |
| | 2.5. Doors | | |
| | 2.6. Attic | | |
| | 2.7. Basement | | |
| | 2.8. Crawlspace | | |
| | 2.9. Garage | | |
| | 2.10. Porch | | |
| 3. Mechanical Systems | 3.1. Heating | | |
| | 3.2. Cooling | | |
| | 3.3. Ventilation | | |
| | 3.4. Air Filtration | | |
| | 3.5. Ductwork | | |
| | 3.6. Exhaust | | |
| | 3.7. Distribution | | |
| | 3.8. Control | | |
| | 3.9. Maintenance | | |
| | 3.10. Testing | | |
| 4. Indoor Air Quality | 4.1. Radon | | |
| | 4.2. Mold | | |
| | 4.3. VOCs | | |
| | 4.4. Formaldehyde | | |
| | 4.5. Carbon Monoxide | | |
| | 4.6. Particulate Matter | | |
| | 4.7. Ozone | | |
| | 4.8. Nitrogen Dioxide | | |
| | 4.9. Sulfur Dioxide | | |
| | 4.10. Other | | |

Moisture Control



1. Moisture Control

*Starts with the **ENERGY STAR**
Thermal Bypass Checklist*

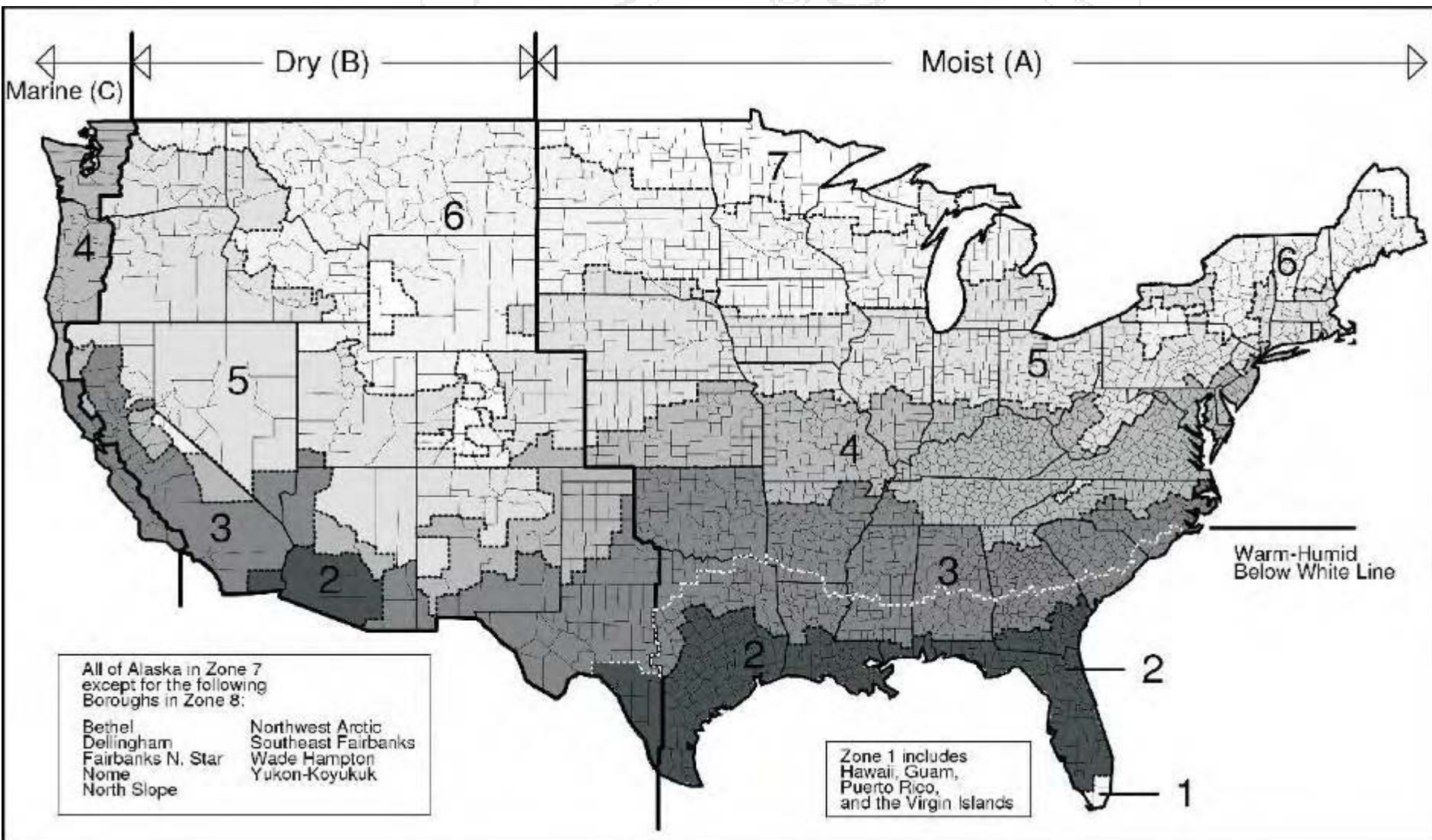


*And continues with **Indoor airPLUS** ...*

For Climate Exceptions

Figure 301.1, 2006 International Energy Conservation Code®

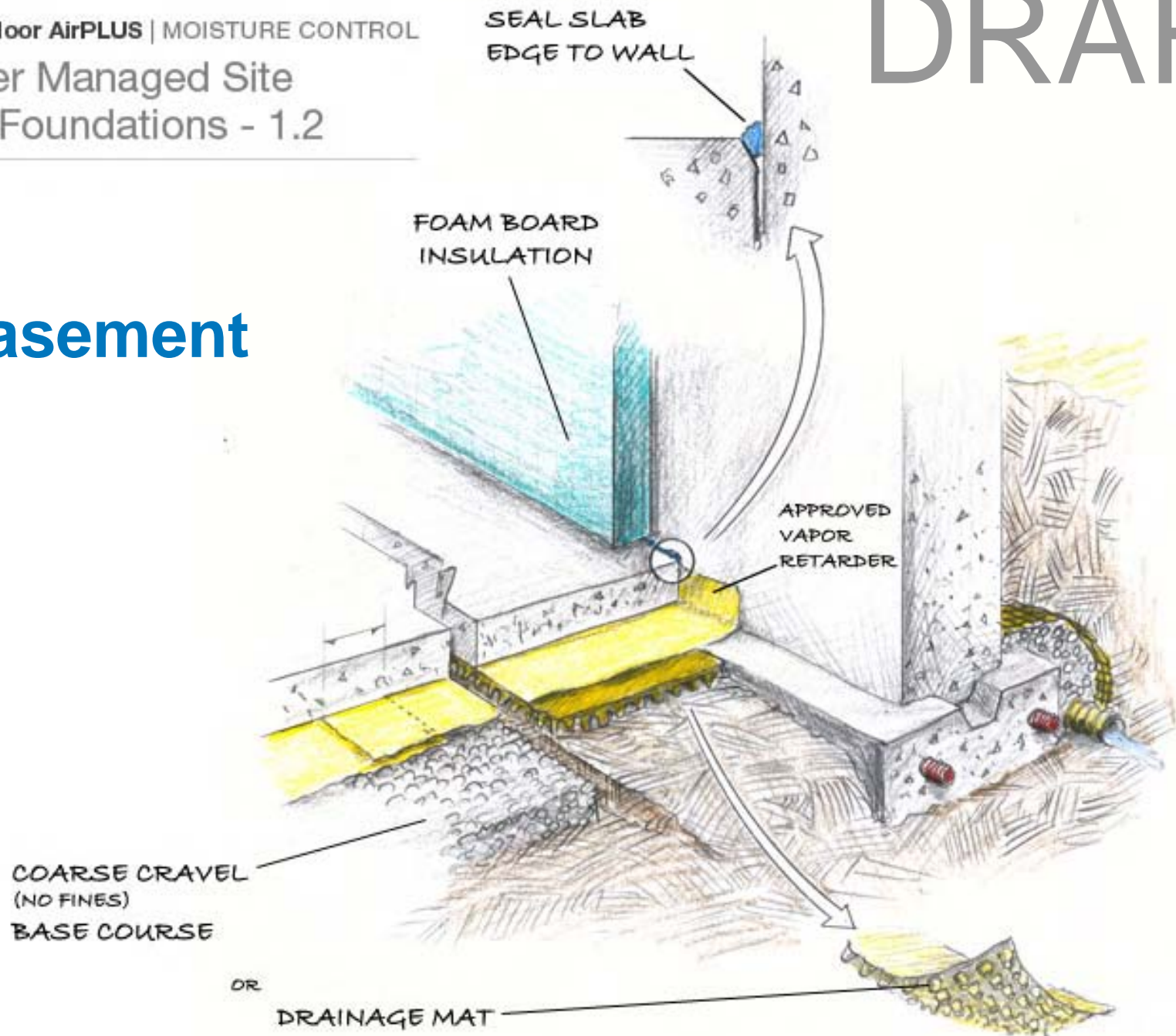
Copyright 2006, Washington, DC: International Code Council. Reproduced with permission. All rights reserved.



Water Managed Site and Foundations - 1.2

DRAFT

Basement



Water Managed Site and Foundations - 1.4

INSULATION
MINIMUM OF
3 INCHES BELOW
SILL PLATE

DRAFT

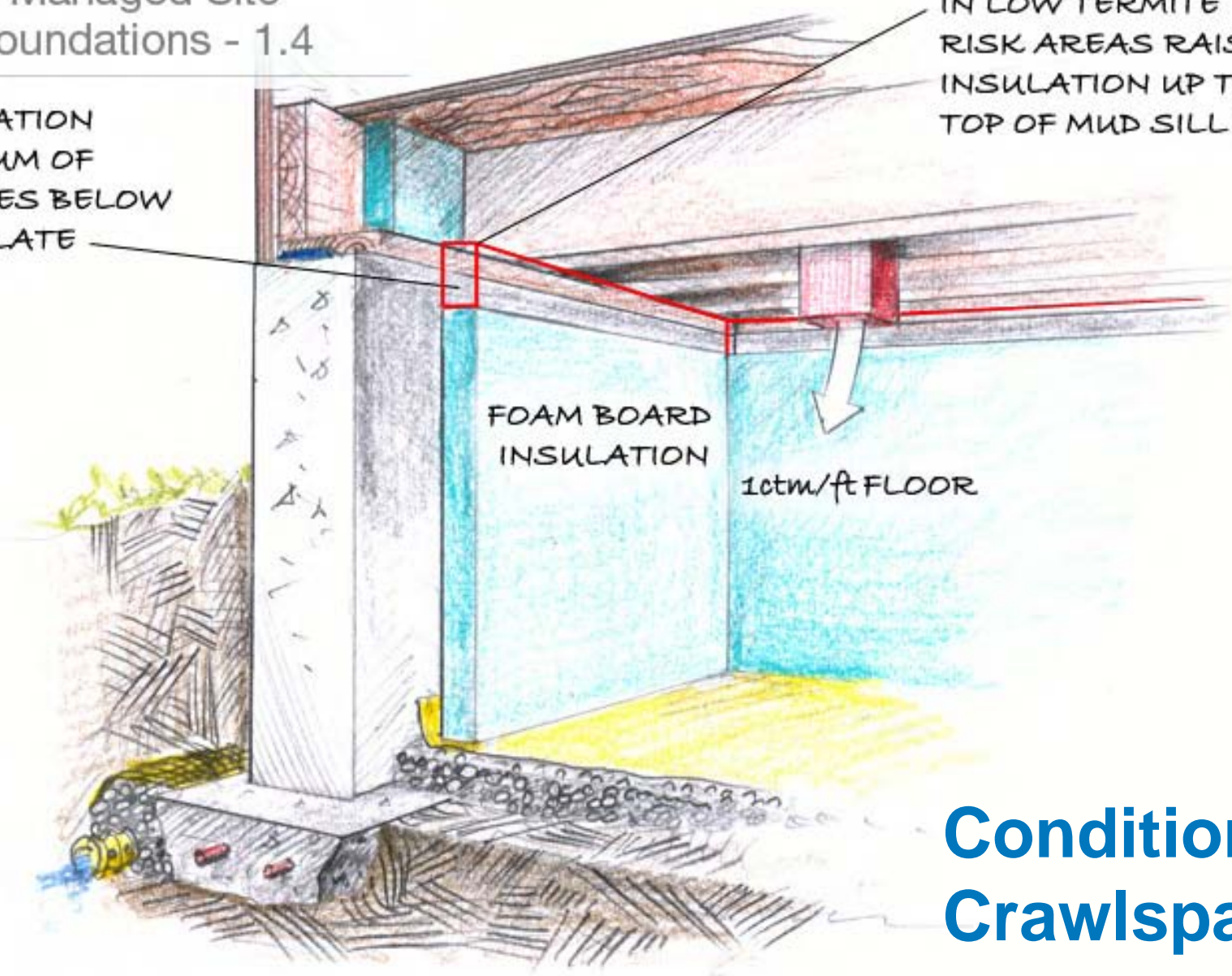
IN LOW TERMITE
RISK AREAS RAISE
INSULATION UP TO
TOP OF MUD SILL PLATE

FOAM BOARD
INSULATION

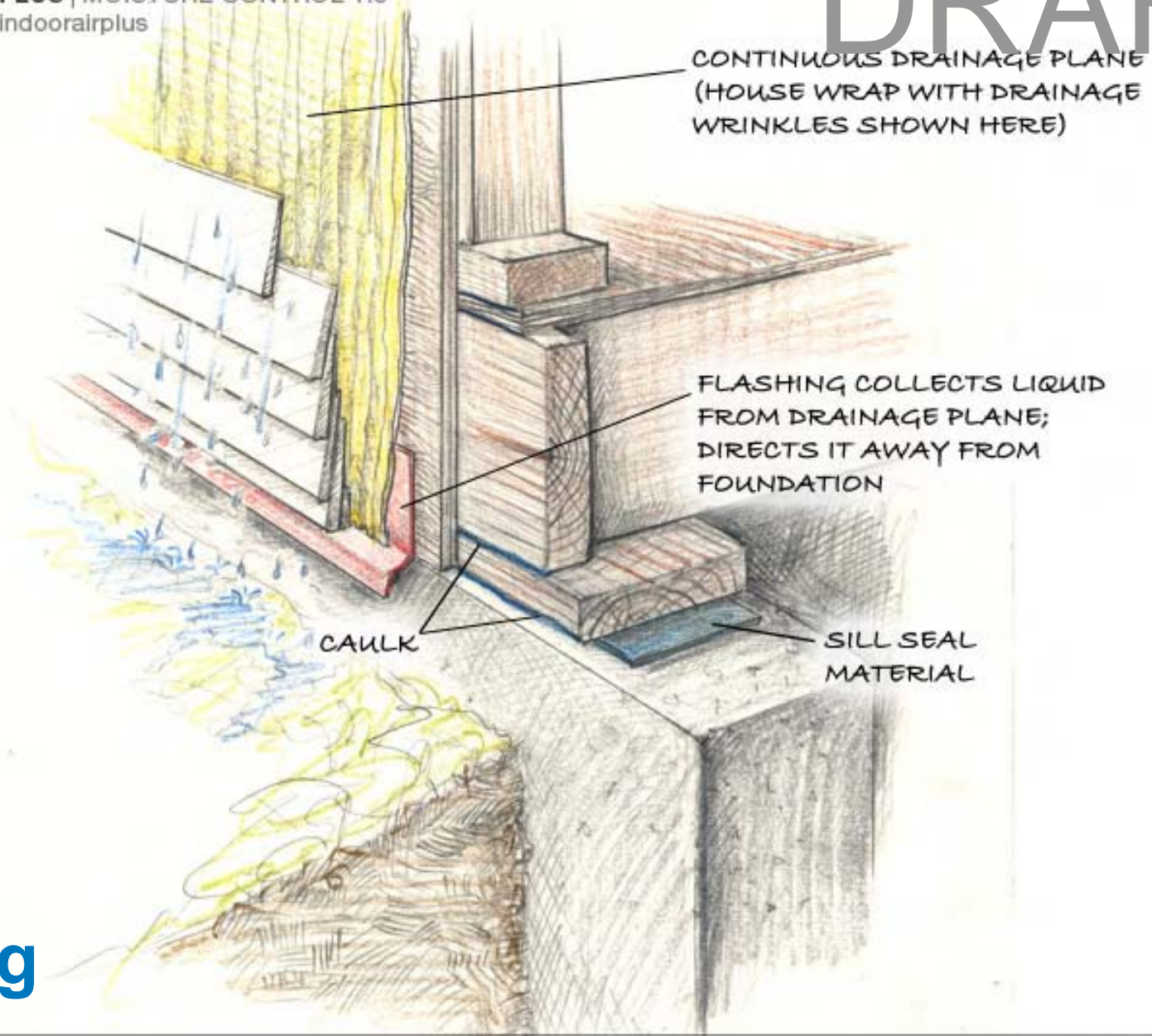
10cm/ft FLOOR

**Conditioned
Crawlspace**

CONDITIONED AIR OPTION



DRAFT



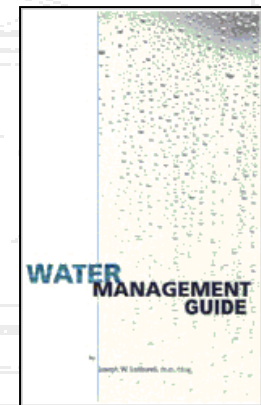
Siding

SIDING WITH DRAINAGE PLANE AND FLASHING

1.6 Fully Flash Windows & Doors



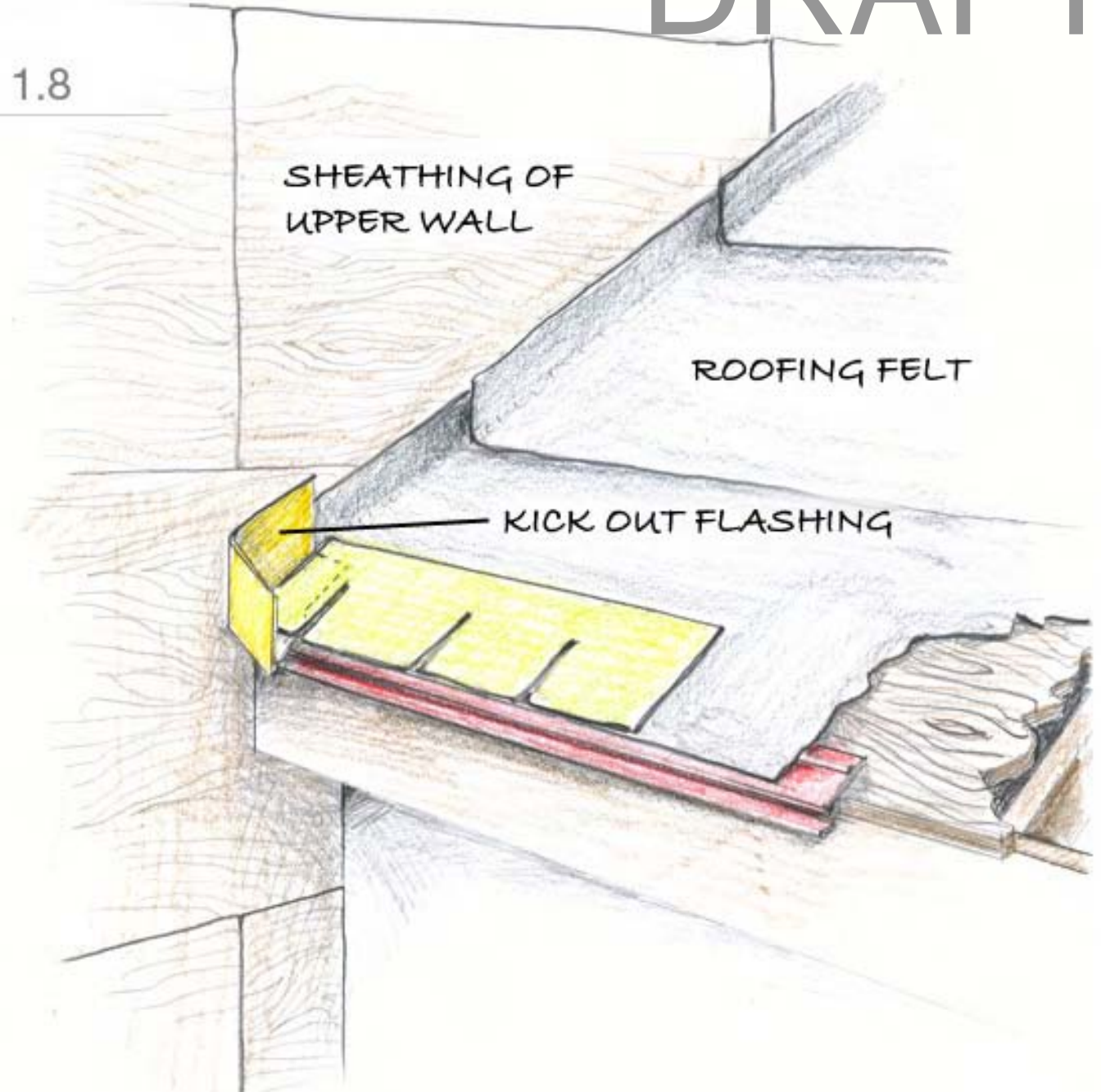
More Details ...



Water Managed
Roof Assemblies - 1.8

SLIDE 1 OF 3

DRAFT

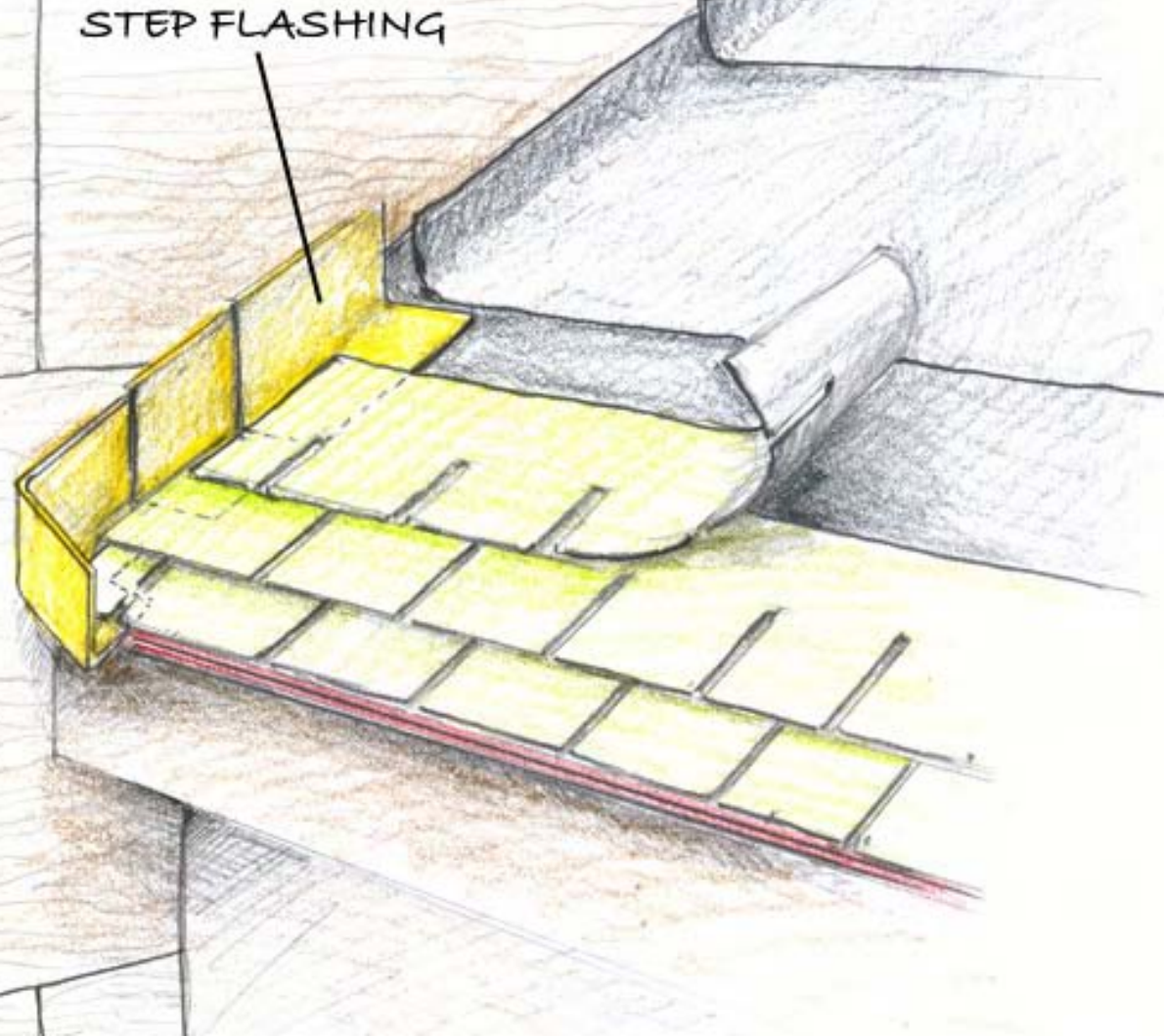


Roof
Flashing

Water Managed
Roof Assemblies - 1.8

SLIDE 2 OF 3

DRAFT

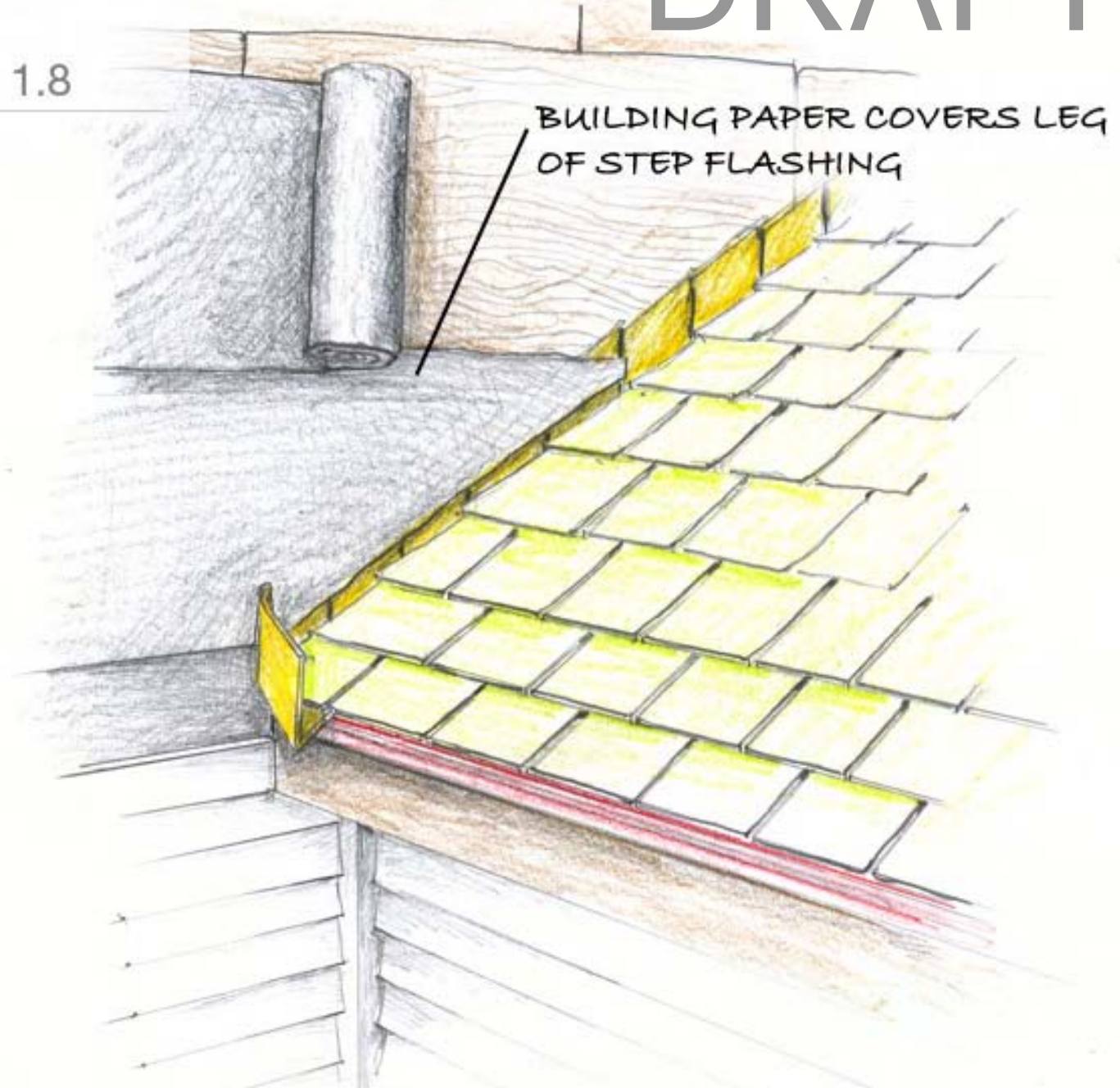


Roof
Flashing

Water Managed
Roof Assemblies - 1.8

SLIDE 3 OF 3

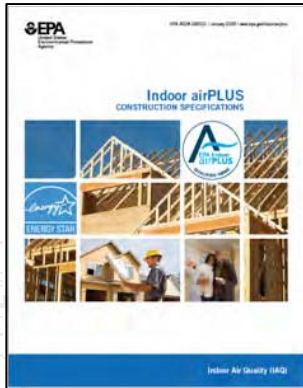
DRAFT



Roof
Flashing

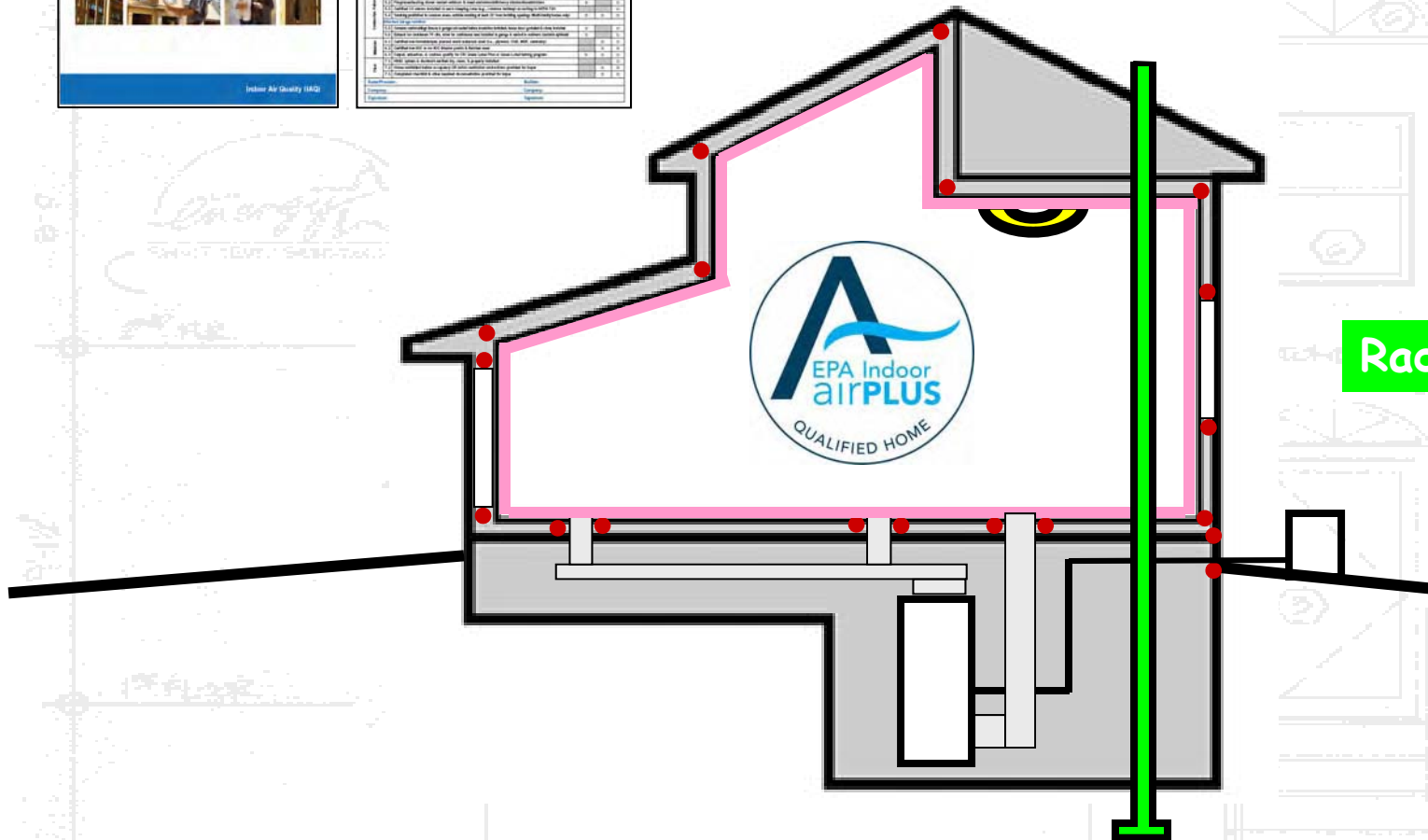
Indoor airPLUS

Highlights



Indoor airPLUS Verification Checklist

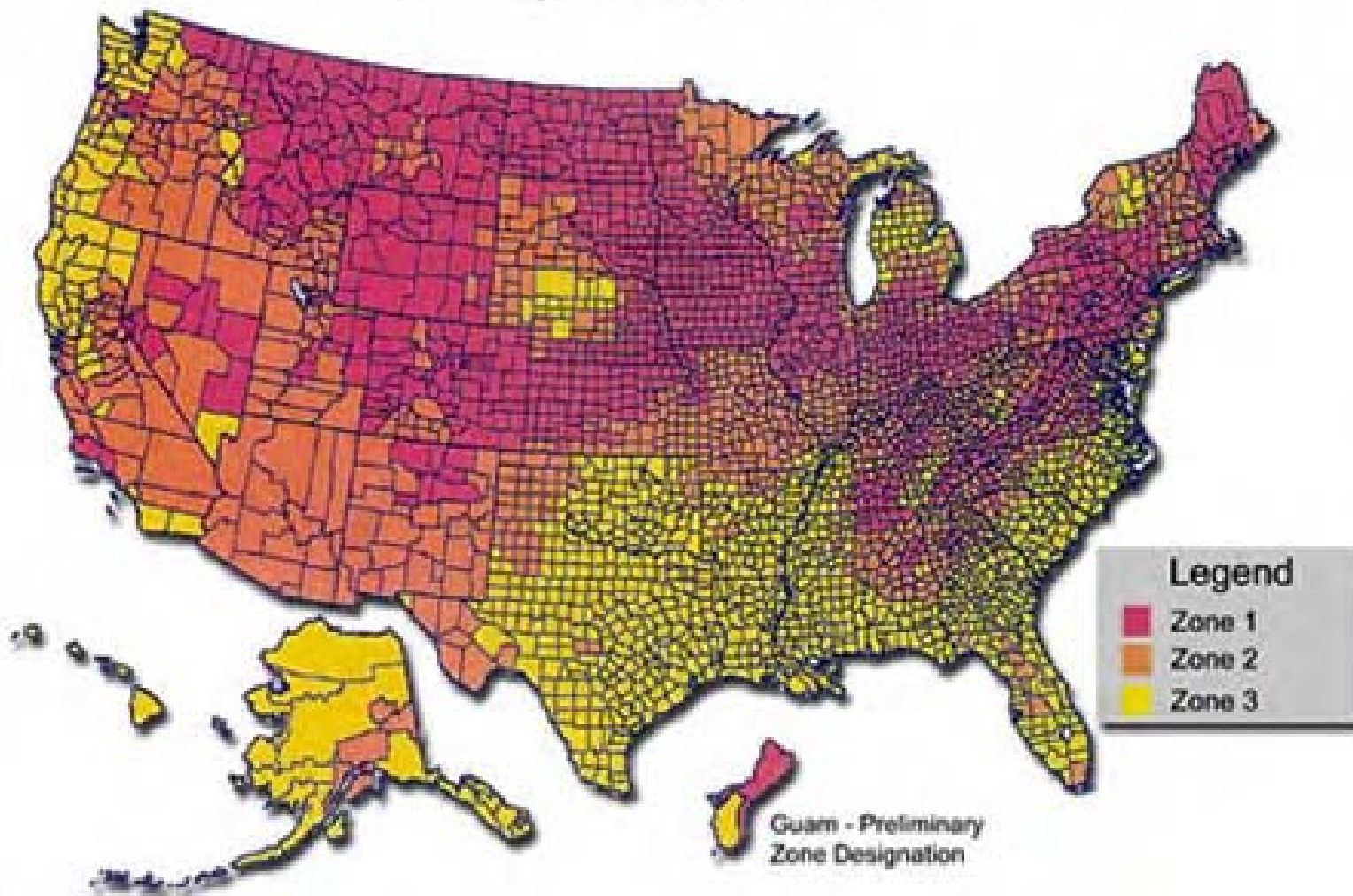
| Category | Item | Compliance | Notes |
|----------------|--|------------|-------|
| 1. General | 1.1. Verify that the project is a new construction or major renovation project. | | |
| | 1.2. Verify that the project is a residential building. | | |
| | 1.3. Verify that the project is a single-family home or a small commercial building. | | |
| | 1.4. Verify that the project is a new construction or major renovation project. | | |
| | 1.5. Verify that the project is a new construction or major renovation project. | | |
| | 1.6. Verify that the project is a new construction or major renovation project. | | |
| | 1.7. Verify that the project is a new construction or major renovation project. | | |
| | 1.8. Verify that the project is a new construction or major renovation project. | | |
| | 1.9. Verify that the project is a new construction or major renovation project. | | |
| | 1.10. Verify that the project is a new construction or major renovation project. | | |
| 2. Air Sealing | 2.1. Verify that the project is a new construction or major renovation project. | | |
| | 2.2. Verify that the project is a new construction or major renovation project. | | |
| | 2.3. Verify that the project is a new construction or major renovation project. | | |
| | 2.4. Verify that the project is a new construction or major renovation project. | | |
| | 2.5. Verify that the project is a new construction or major renovation project. | | |
| | 2.6. Verify that the project is a new construction or major renovation project. | | |
| | 2.7. Verify that the project is a new construction or major renovation project. | | |
| | 2.8. Verify that the project is a new construction or major renovation project. | | |
| | 2.9. Verify that the project is a new construction or major renovation project. | | |
| | 2.10. Verify that the project is a new construction or major renovation project. | | |
| 3. Ventilation | 3.1. Verify that the project is a new construction or major renovation project. | | |
| | 3.2. Verify that the project is a new construction or major renovation project. | | |
| | 3.3. Verify that the project is a new construction or major renovation project. | | |
| | 3.4. Verify that the project is a new construction or major renovation project. | | |
| | 3.5. Verify that the project is a new construction or major renovation project. | | |
| | 3.6. Verify that the project is a new construction or major renovation project. | | |
| | 3.7. Verify that the project is a new construction or major renovation project. | | |
| | 3.8. Verify that the project is a new construction or major renovation project. | | |
| | 3.9. Verify that the project is a new construction or major renovation project. | | |
| | 3.10. Verify that the project is a new construction or major renovation project. | | |
| 4. Radon | 4.1. Verify that the project is a new construction or major renovation project. | | |
| | 4.2. Verify that the project is a new construction or major renovation project. | | |
| | 4.3. Verify that the project is a new construction or major renovation project. | | |
| | 4.4. Verify that the project is a new construction or major renovation project. | | |
| | 4.5. Verify that the project is a new construction or major renovation project. | | |
| | 4.6. Verify that the project is a new construction or major renovation project. | | |
| | 4.7. Verify that the project is a new construction or major renovation project. | | |
| | 4.8. Verify that the project is a new construction or major renovation project. | | |
| | 4.9. Verify that the project is a new construction or major renovation project. | | |
| | 4.10. Verify that the project is a new construction or major renovation project. | | |



Radon Control

Note: High levels of Radon can be found in any home.

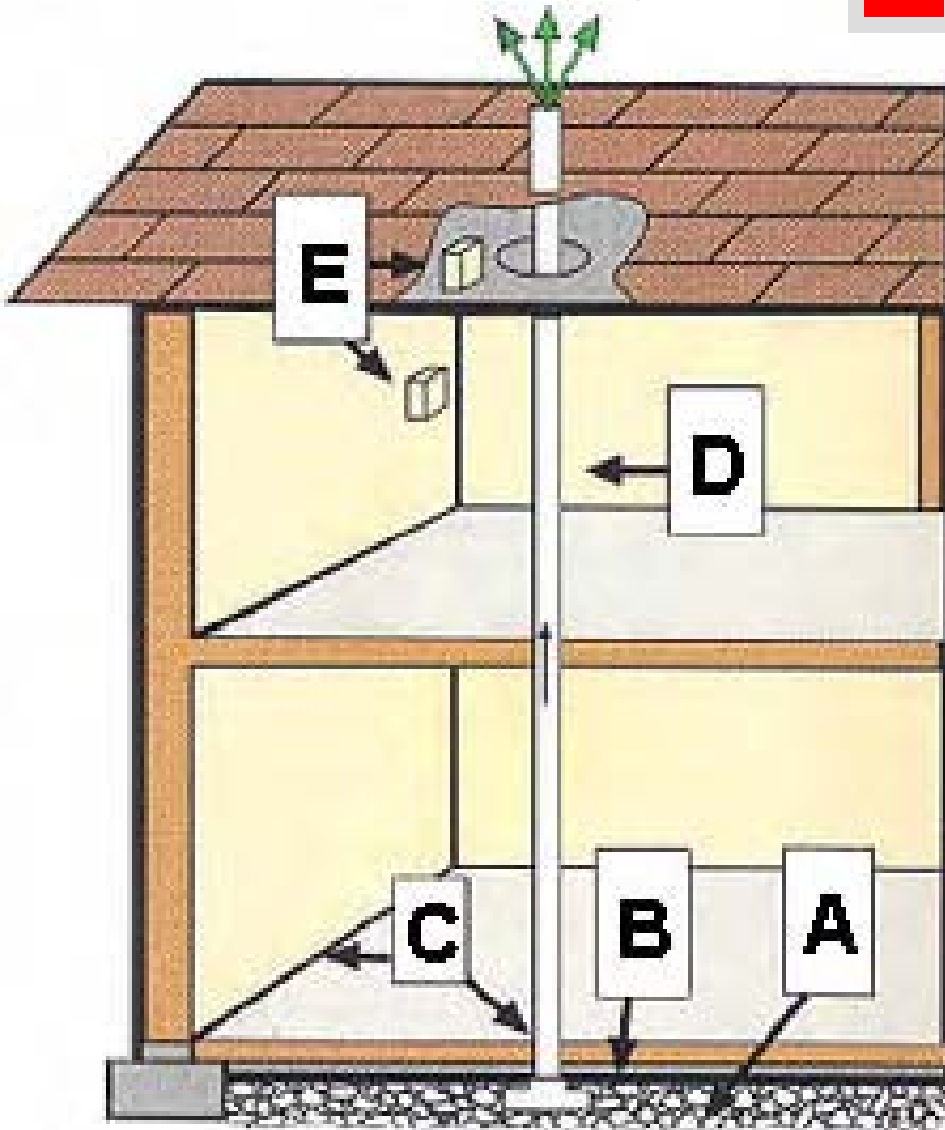
EPA Map of Radon Zones



2.1 Radon Resistant New Construction

 Zone 1

See 1.2



A. Gas Permeable Layer
(4" clean gravel)

B. Plastic Sheeting
(under slab or over crawl space)

C. Sealing and Caulking
(all openings in concrete floor)

D. Vent Pipe
(3 or 4 inch PVC pipe)

E. Junction Box
(if fan needed later)

2.1 Radon Resistant New Construction



2.2 Provide buyer 2 Radon test kits



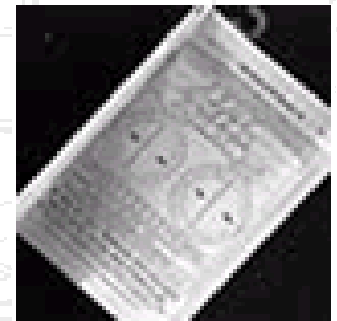
Zone 1



Zone 2



**Long Term
Test Kits
(Alpha
Track)**

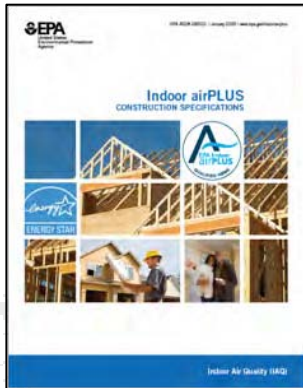


**Short Term
Test Kits
(Charcoal)**

<http://www.epa.gov/radon/radontest.html>

Indoor airPLUS

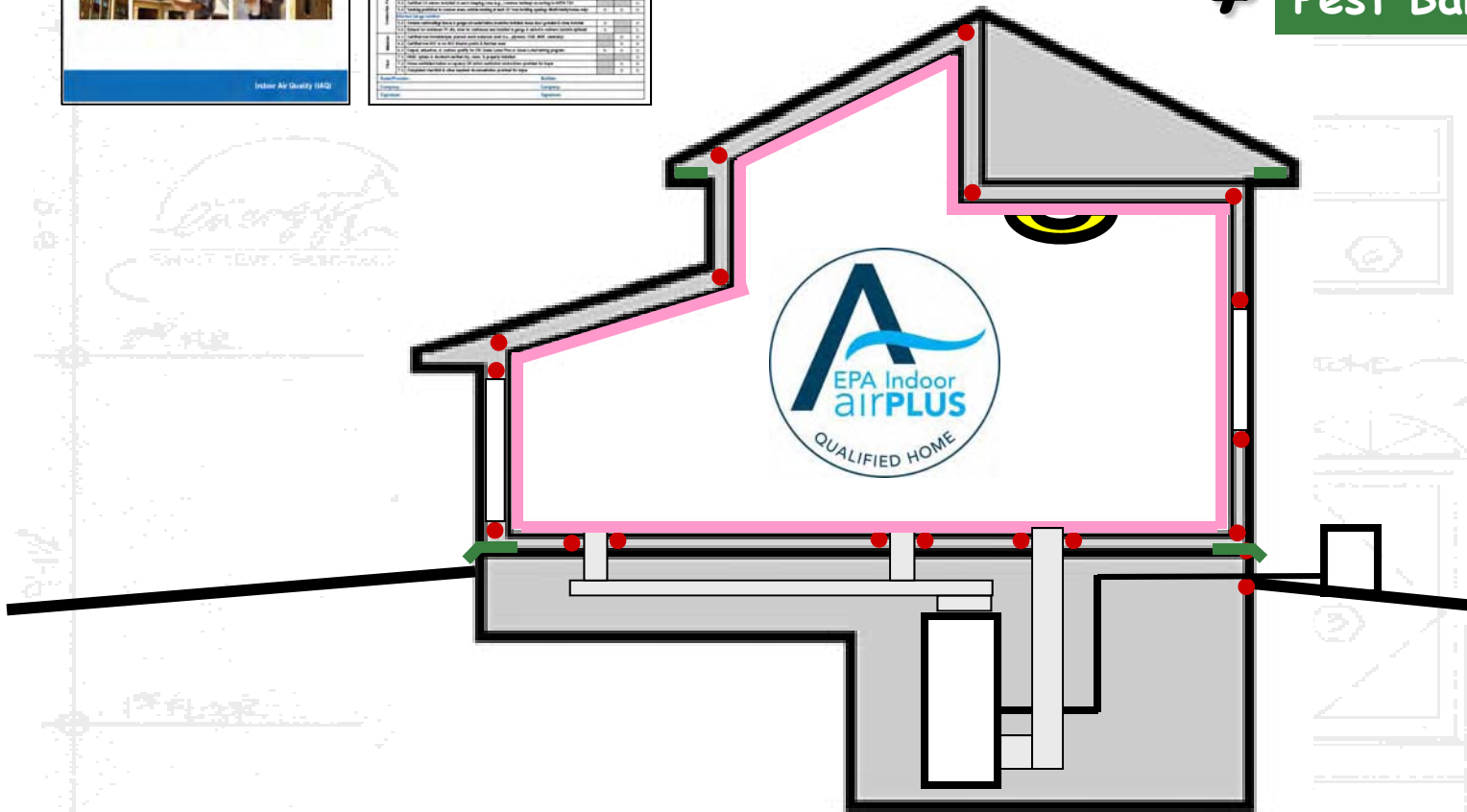
Highlights



Indoor airPLUS Verification Checklist

| Section | Item | Pass/Fail | Notes |
|-----------------------------|---|-----------|-------|
| 1. General Requirements | 1.1. Verify that the project is a new construction or major renovation project. | | |
| | 1.2. Verify that the project is a single-family residential building. | | |
| | 1.3. Verify that the project is a new construction or major renovation project. | | |
| | 1.4. Verify that the project is a single-family residential building. | | |
| | 1.5. Verify that the project is a new construction or major renovation project. | | |
| | 1.6. Verify that the project is a single-family residential building. | | |
| | 1.7. Verify that the project is a new construction or major renovation project. | | |
| | 1.8. Verify that the project is a single-family residential building. | | |
| | 1.9. Verify that the project is a new construction or major renovation project. | | |
| | 1.10. Verify that the project is a single-family residential building. | | |
| 2. Air Barrier Requirements | 2.1. Verify that the project is a new construction or major renovation project. | | |
| | 2.2. Verify that the project is a single-family residential building. | | |
| | 2.3. Verify that the project is a new construction or major renovation project. | | |
| | 2.4. Verify that the project is a single-family residential building. | | |
| | 2.5. Verify that the project is a new construction or major renovation project. | | |
| | 2.6. Verify that the project is a single-family residential building. | | |
| | 2.7. Verify that the project is a new construction or major renovation project. | | |
| | 2.8. Verify that the project is a single-family residential building. | | |
| | 2.9. Verify that the project is a new construction or major renovation project. | | |
| | 2.10. Verify that the project is a single-family residential building. | | |
| 3. Ventilation Requirements | 3.1. Verify that the project is a new construction or major renovation project. | | |
| | 3.2. Verify that the project is a single-family residential building. | | |
| | 3.3. Verify that the project is a new construction or major renovation project. | | |
| | 3.4. Verify that the project is a single-family residential building. | | |
| | 3.5. Verify that the project is a new construction or major renovation project. | | |
| | 3.6. Verify that the project is a single-family residential building. | | |
| | 3.7. Verify that the project is a new construction or major renovation project. | | |
| | 3.8. Verify that the project is a single-family residential building. | | |
| | 3.9. Verify that the project is a new construction or major renovation project. | | |
| | 3.10. Verify that the project is a single-family residential building. | | |

+ Pest Barriers



3.1 Seal foundation joints/penetrations

3.2 Pest screens

Detailed specification guidance

3. Pest Barriers

- 3.1 Minimize pathways for pest entry by sealing penetrations and joints in and between foundation and exterior wall assemblies, with blocking materials, foam, and polyurethane caulk or equivalent.** In addition, sump pits should be sealed with polyurethane caulk or equivalent.
- 3.2 Provide corrosion-proof rodent/bird screens (e.g., copper or stainless steel mesh) for all building openings that cannot be fully sealed and caulked (e.g., ventilation system intake/exhaust outlets and attic vent openings).** This requirement does not apply to clothes dryer vents.

- Foundation walls should be solid concrete or masonry with top course of solid block, bond beam, or concrete-filled block; AND
- Interior concrete slabs should be constructed with 6 in. x 6 in. welded wire fabric or equivalent, and concrete walls with reinforcing rods to reduce cracking; AND
- Sill plates should be of preservative-treated wood.

2. Additional precautions in areas subject to "Very Heavy" termite infestation probability as identified by IRC Figure 301.2(6) (i.e., AL, FL, GA, LA MS, SC, and parts of CA and TX):

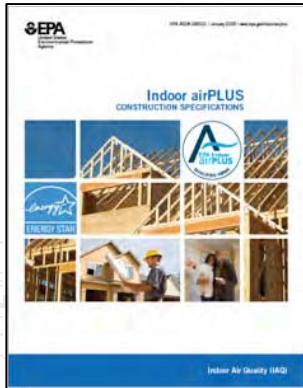
- 3.2 Provide corrosion-proof rodent/bird screens (e.g., copper or stainless steel mesh) for all building openings that cannot be fully sealed and caulked (e.g., ventilation system intake/exhaust outlets and attic vent openings).** This requirement does not apply to clothes dryer vents.



Air
Sealing

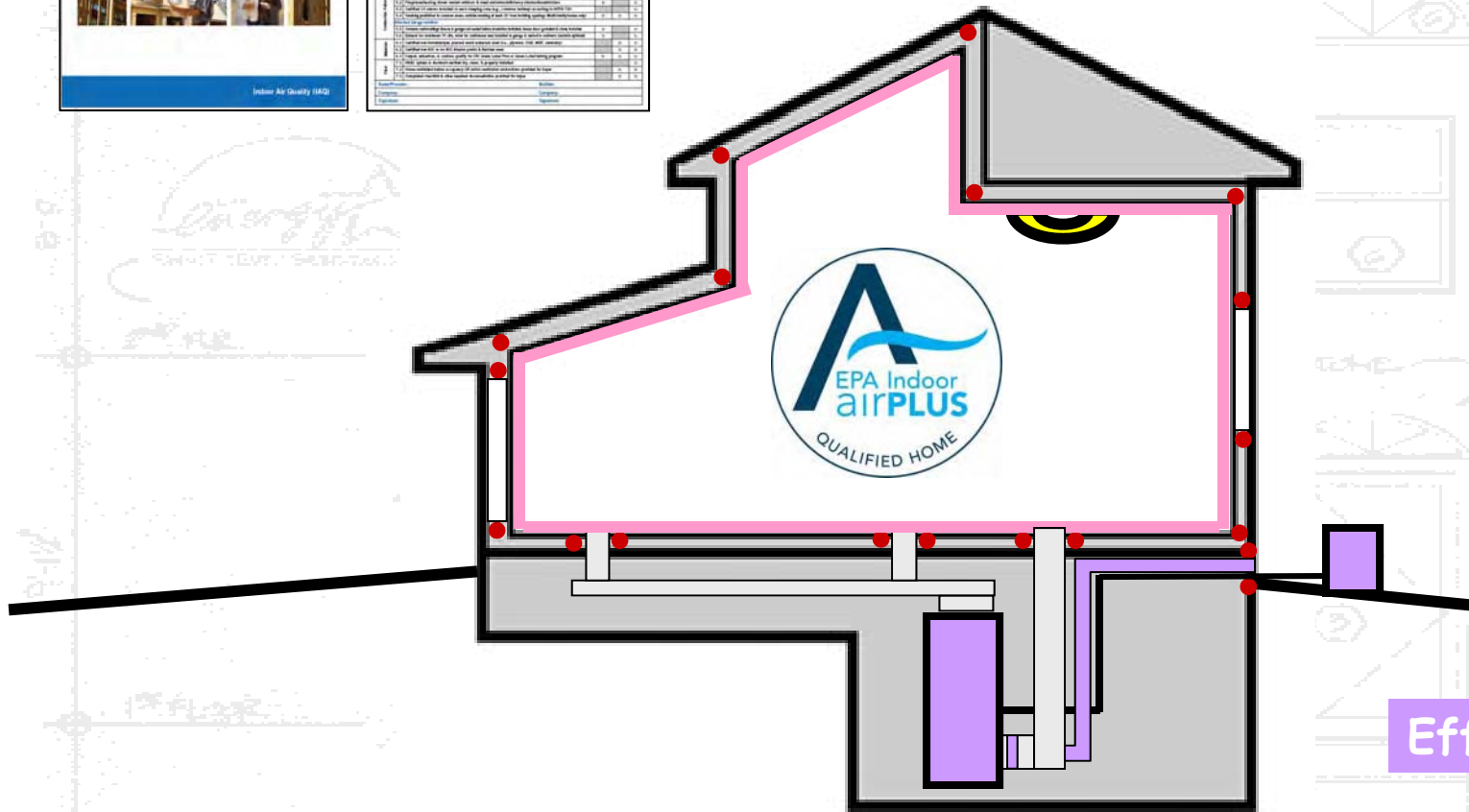


Indoor airPLUS Highlights

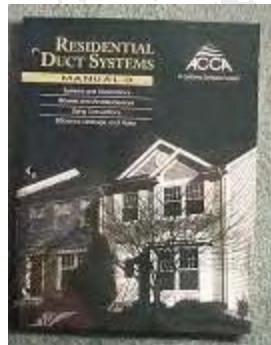


Indoor airPLUS Verification Checklist

| Category | Item | Compliance | Notes |
|-------------------------|--|------------|-------|
| 1. General Requirements | 1.1 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.2 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.3 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.4 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.5 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.6 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.7 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.8 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.9 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.10 The construction manager shall provide a copy of this checklist to the owner. | | |
| 2. Air Sealing | 2.1 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 2.2 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 2.3 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 2.4 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 2.5 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 2.6 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 2.7 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 2.8 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 2.9 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 2.10 The construction manager shall provide a copy of this checklist to the owner. | | |
| 3. Mechanical Systems | 3.1 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 3.2 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 3.3 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 3.4 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 3.5 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 3.6 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 3.7 The construction manager shall provide a copy of this checklist to the owner. | | |
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Effective HVAC

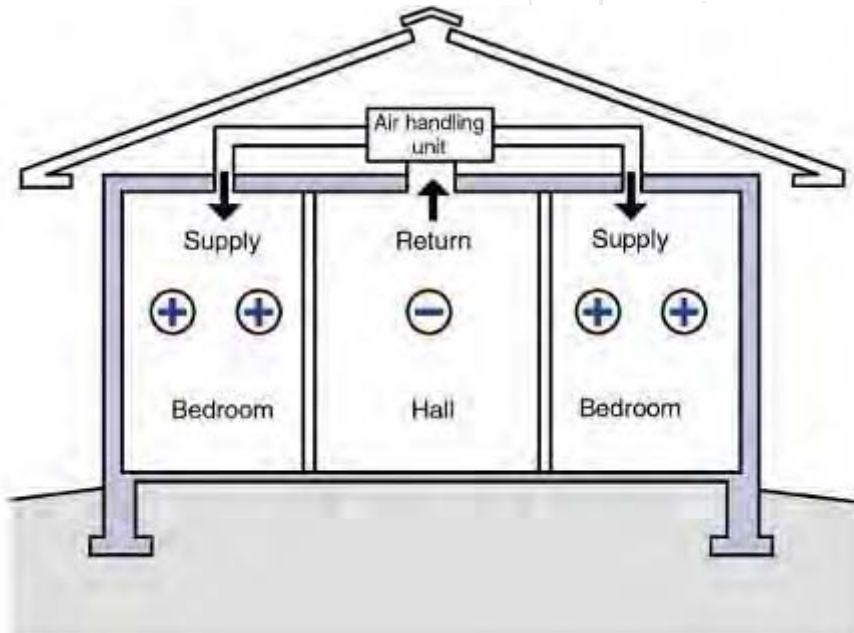


Field
Verified

~~HVAC
& DUCTS
IN GARAGE~~

Documented

4.4 Rooms pressure balanced



JUMP DUCT



TRANSFER GRILLE

OR Pressure Tested ≤ 3 Pa

4.5 Whole House Ventilation

4.6 Local Exhaust Ventilation

LOCAL EXHAUST



FRESH AIR
DAMPER



BALANCED VENTILATION
& HRV/ERV's



DUCTED FRESH AIR SUPPLY

A House Needs to Breathe, Right?

TABLE 4.1a (I-P)
Ventilation Air Requirements, cfm

| Floor Area (ft²) | Bedrooms | | | | |
|--|-----------------|------------|------------|------------|--------------|
| | 0-1 | 2-3 | 4-5 | 6-7 | >7 |
| <1500 | 30 | 45 | 60 | 75 | 90 |
| 1501-3000 | 45 | 60 | 75 | 90 | 105 |
| 3001-4500 | 60 | 75 | 90 | 105 | 120 |
| 4501-6000 | 75 | 90 | 105 | 120 | 135 |
| 6001-7500 | 90 | 105 | 120 | 135 | 150 |
| >7500 | 105 | 120 | 135 | 150 | 165 |

4.7 MERV 8 Filter, No by-pass, & No Ozone Generating Systems

Specific Specification Guidance

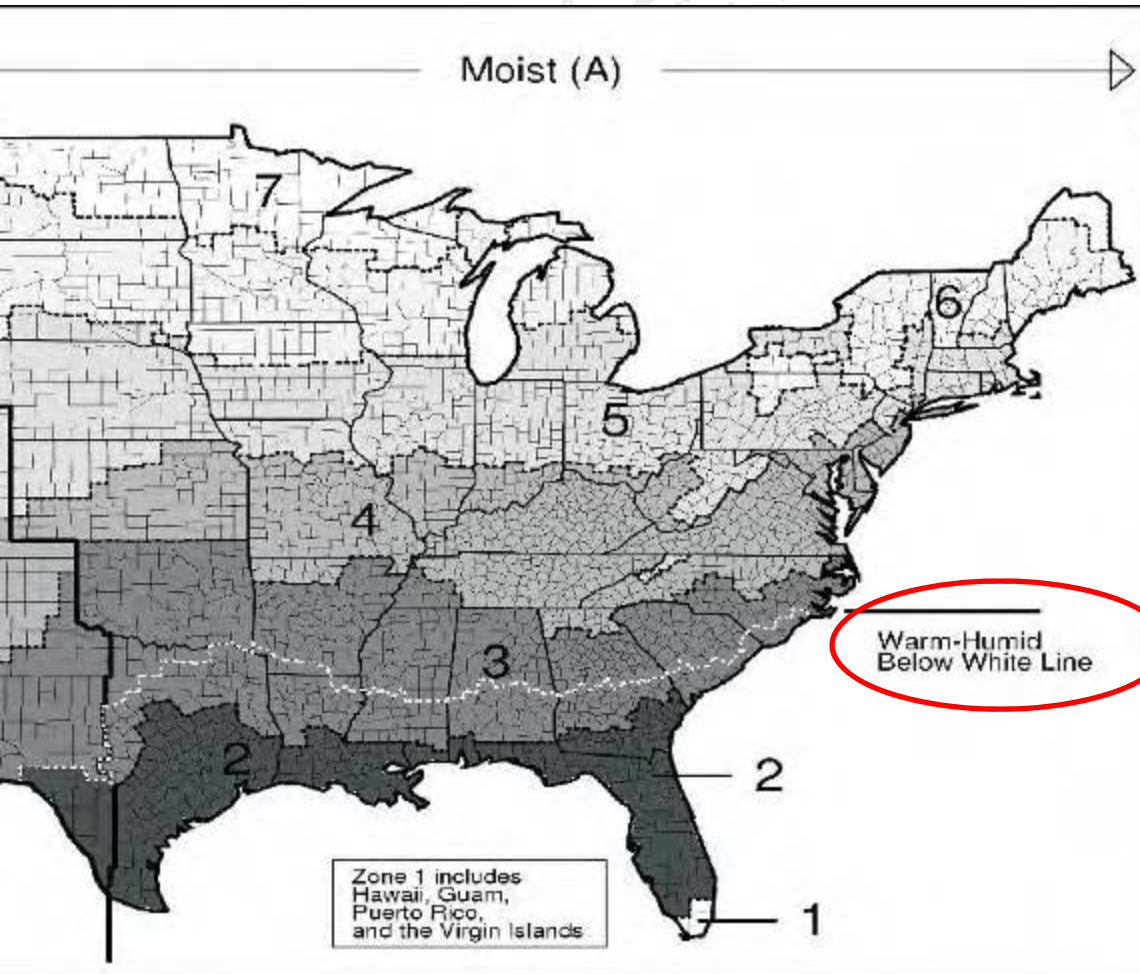
Air Cleaning and Filtration

4.7 Central forced-air HVAC systems shall include a filtration system meeting the following requirements:

- No air cleaning equipment that intentionally produces ozone (rather than as an incidental by-product) shall be installed.
- HVAC filters shall be rated MERV 8 or higher according to ASHRAE 52.2 (at ~295 fpm).
- There shall be no visible bypass between the filter and the filter rack.
- Filter access panel shall include a gasket or comparable sealing mechanism to prevent air leakage, and shall fit snugly against the exposed edge of the installed filter when closed to prevent bypass.

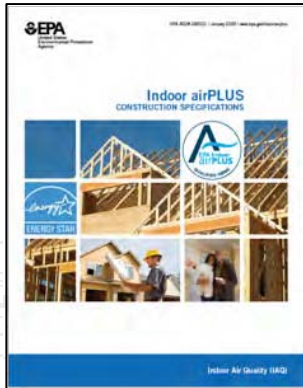


4.8 Independent dehumidification control in warm humid climates



➔ Controlled to
 $\leq 60\%$ RH

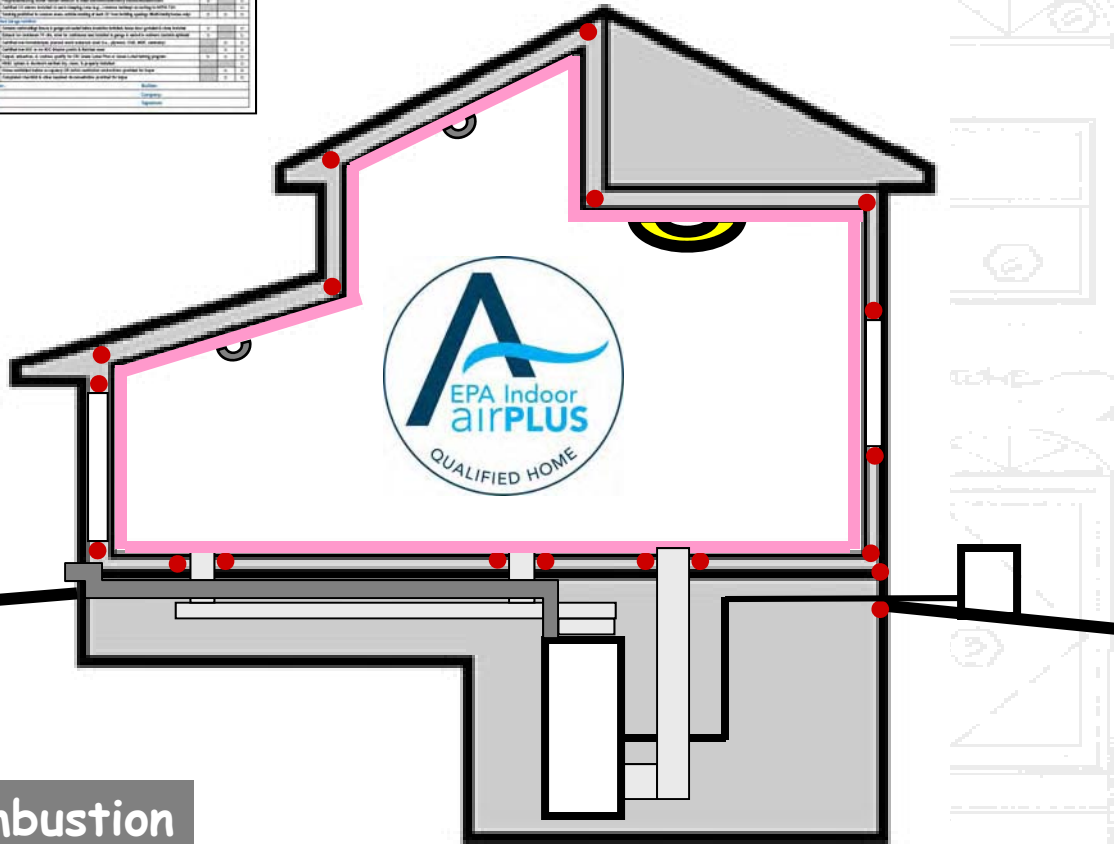
Indoor airPLUS Highlights



Indoor airPLUS Verification Checklist

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|-------------------------------------|--|------------|-------|
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| | 1.2 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 1.3 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 1.4 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 1.5 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 1.6 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 1.7 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 1.8 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 1.9 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 1.10 The contractor shall provide a copy of this checklist to the contractor. | | |
| 2. Air Sealing | 2.1 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 2.2 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 2.3 The contractor shall provide a copy of this checklist to the contractor. | | |
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| | 2.8 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 2.9 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 2.10 The contractor shall provide a copy of this checklist to the contractor. | | |
| 3. Ventilation | 3.1 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 3.2 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 3.3 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 3.4 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 3.5 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 3.6 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 3.7 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 3.8 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 3.9 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 3.10 The contractor shall provide a copy of this checklist to the contractor. | | |
| 4. Combustion Appliance Ventilation | 4.1 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 4.2 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 4.3 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 4.4 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 4.5 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 4.6 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 4.7 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 4.8 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 4.9 The contractor shall provide a copy of this checklist to the contractor. | | |
| | 4.10 The contractor shall provide a copy of this checklist to the contractor. | | |

Safe Combustion



5.1 Power Venting & Direct Venting



POWER VENTED WATER HEATER

DIRECT VENTED FURNACE

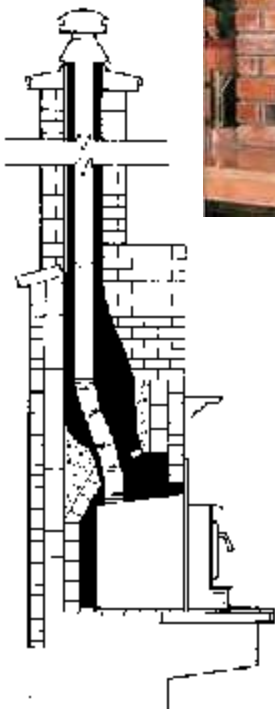


5.2 Fireplaces & Stoves Certified

Specific Specification Guidance

5.2 *Fireplaces and similar fuel burning appliances located in conditioned spaces shall be vented to the outdoors and supplied with adequate combustion and ventilation air according to manufacturers' installation instructions AND shall meet the following energy efficiency and emissions standards and restrictions:*

- **Masonry fireplaces** are not permitted, with the exception of "masonry heaters" as defined by ASTM E1602, and the IBC, section 2112.1 (i.e., fireplaces engineered to store and release substantial portions of heat generated from a rapid burn).
- **Factory-built, wood-burning fireplaces** shall meet the certification requirements of UL 127, and meet the emission limits in EPA 40 CFR Part 60.
- **Natural gas and propane fireplaces** shall be power vented or direct vented, as defined by NFPA 54, section 3.3.108, have a permanently fixed glass front or gasketed door, and comply with ANSI Z21.88/CSA 2.33.
- **Wood stove and fireplace inserts** as defined in Section 3.8 of UL 1482, shall meet the certification requirements of that standard, and shall meet emission requirements of EPA 40 CFR Part 60 and WAC 173-433-100 (3).
- **Pellet stoves** shall meet the requirements of ASTM E1509.
- **Decorative gas logs** as defined in K.1.11 of NFPA 54 (National Fuel Gas Code) are not permitted.
- **Unvented combustion appliances** are not permitted, with the exception of kitchen-type cooking devices with exhaust ventilation meeting ASHRAE 62.2 (section 5).



5.3 Certified CO Alarms

5.4 No Smoking (multifamily)



CO ALARM



COMBINED CO & SMOKE
ALARM



Enforceable policy in
Multi-family buildings

5.5 Garage common walls/ceilings sealed

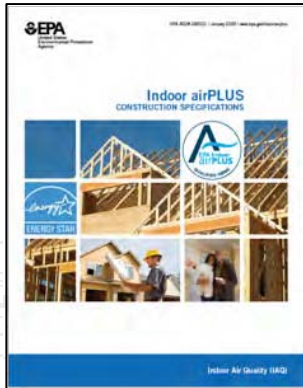
5.6 Exhaust fan (≥ 70 cfm)



EXHAUST FAN



Indoor airPLUS Highlights



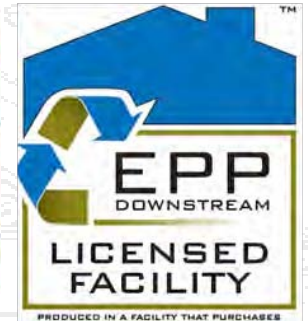
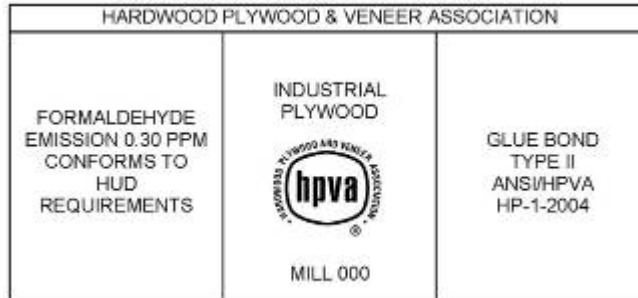
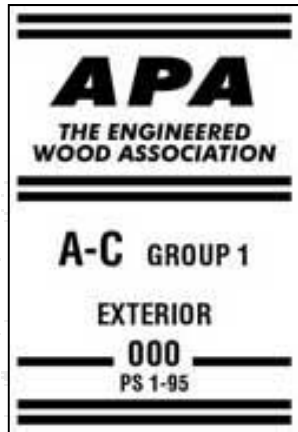
Indoor airPLUS Verification Checklist

| Category | Item | Compliance | Notes |
|---------------------------------------|--|------------|-------|
| 1. General Requirements | 1.1 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.2 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.3 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.4 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.5 The construction manager shall provide a copy of this checklist to the owner. | | |
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| | 1.8 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.9 The construction manager shall provide a copy of this checklist to the owner. | | |
| | 1.10 The construction manager shall provide a copy of this checklist to the owner. | | |
| 2. Air Quality Management Plan (AQMP) | 2.1 The construction manager shall develop and implement an AQMP. | | |
| | 2.2 The construction manager shall develop and implement an AQMP. | | |
| | 2.3 The construction manager shall develop and implement an AQMP. | | |
| | 2.4 The construction manager shall develop and implement an AQMP. | | |
| | 2.5 The construction manager shall develop and implement an AQMP. | | |
| | 2.6 The construction manager shall develop and implement an AQMP. | | |
| | 2.7 The construction manager shall develop and implement an AQMP. | | |
| | 2.8 The construction manager shall develop and implement an AQMP. | | |
| | 2.9 The construction manager shall develop and implement an AQMP. | | |
| | 2.10 The construction manager shall develop and implement an AQMP. | | |
| 3. Material Handling and Storage | 3.1 Materials shall be stored in a designated area. | | |
| | 3.2 Materials shall be stored in a designated area. | | |
| | 3.3 Materials shall be stored in a designated area. | | |
| | 3.4 Materials shall be stored in a designated area. | | |
| | 3.5 Materials shall be stored in a designated area. | | |
| | 3.6 Materials shall be stored in a designated area. | | |
| | 3.7 Materials shall be stored in a designated area. | | |
| | 3.8 Materials shall be stored in a designated area. | | |
| | 3.9 Materials shall be stored in a designated area. | | |
| | 3.10 Materials shall be stored in a designated area. | | |
| 4. Construction Practices | 4.1 Construction practices shall follow best practices. | | |
| | 4.2 Construction practices shall follow best practices. | | |
| | 4.3 Construction practices shall follow best practices. | | |
| | 4.4 Construction practices shall follow best practices. | | |
| | 4.5 Construction practices shall follow best practices. | | |
| | 4.6 Construction practices shall follow best practices. | | |
| | 4.7 Construction practices shall follow best practices. | | |
| | 4.8 Construction practices shall follow best practices. | | |
| | 4.9 Construction practices shall follow best practices. | | |
| | 4.10 Construction practices shall follow best practices. | | |

**Healthy
Materials**



6.1 Pressed wood materials: certified low formaldehyde



6.2 Interior paints/finishes low emitting

6.3 Low emitting carpets, pads

Paints:



Carpeting:



or CA Section 01350:
chps.net/manual/lem_table.htm



Indoor airPLUS

A new opportunity for leading
builders to create better environments
inside and out



Learn more at:

www.epa.gov/indoorairplus

**OR contact the Indoor
airPLUS Team at**

iap@icfi.com